A BUYER'S GUIDE TO I.T. VALUE METHODOLOGIES Page 60

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CIO

The Magazine for Information Executives

BACK FROM BANKRUPTCY

Lessons learned from businesses emerging from Chapter 11

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HOW TO THINK LIKE A CFO

Advice from CIOs who have played both roles

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Owens Corning CIO
David Johns and his staff now run their own show.

ERP, CRM, SCM—

It's time to TAKE CONTROL

CIOs have learned they can run enterprise projects better than the Big Five consultancies. Here's what they're doing about it. Page 46

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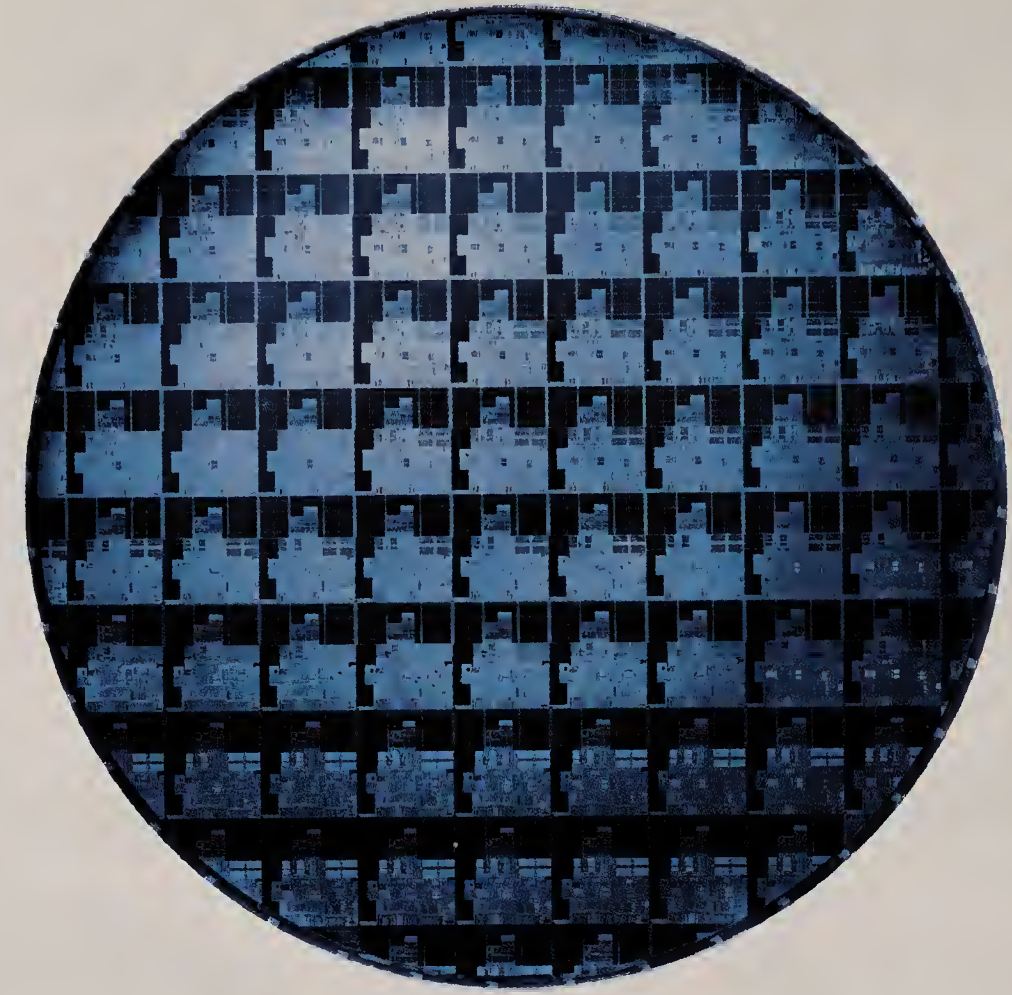

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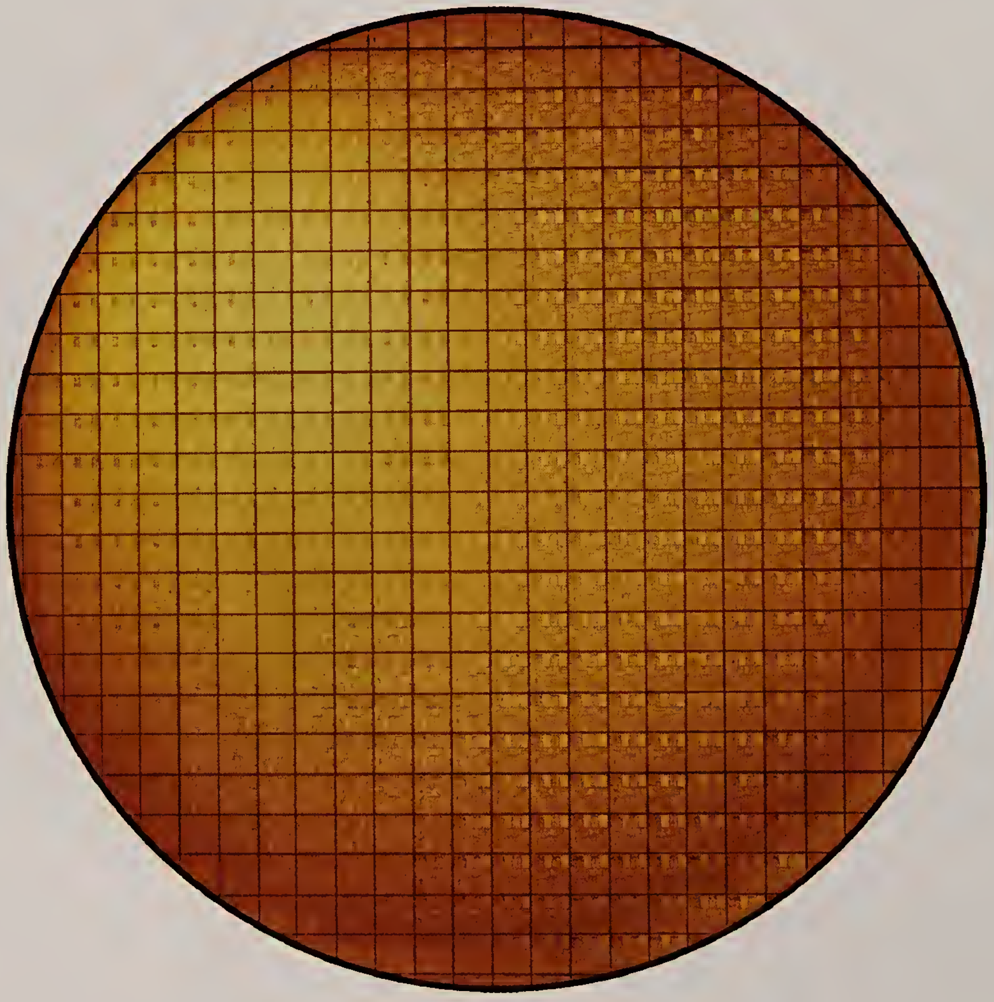

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Cover Story

ENTERPRISE PROJECTS | 46

Take Control

Consultants—can't live with 'em, can't live without 'em

Fed up with the failure of consultant-led enterprise software projects, CIOs are demanding more (and less) from the big consultancies or doing without them altogether. *By Christopher Koch*

COVER PHOTO BY JOE HARRISON

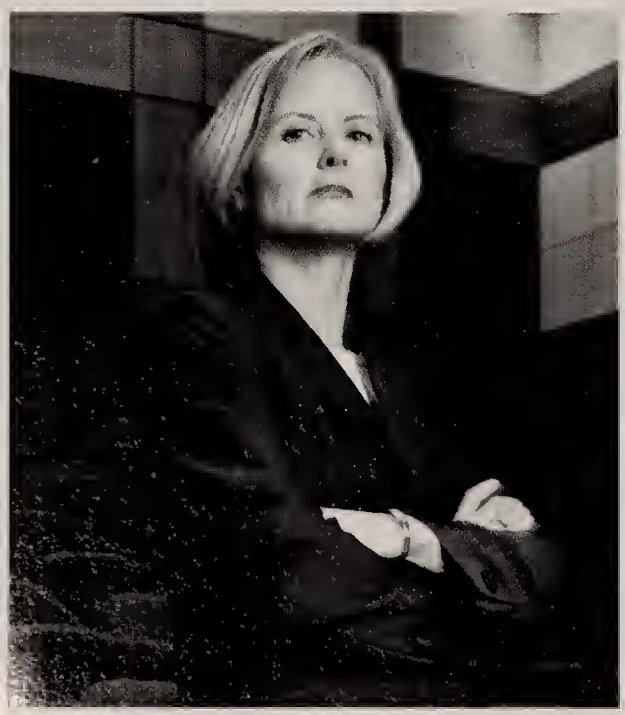
Any change in your company has to be internally driven, says Owens Corning CIO David Johns. His staffers now run big software projects themselves.

Features

TURNAROUND MANAGEMENT

And Now for the Good News... | 54

CIOs who survive the trials of Chapter 11 often find a clarity of purpose...and a chance to prove IT's value. *By Ben Worthen*



On the second day of her new job, CIO **Janis Emplit**'s company, Advantica Restaurant Group, filed for Chapter 11 bankruptcy protection. Six months later, it emerged from Chapter 11, and she has gained many valuable lessons. Page **54**

I.T. VALUE

A Buyer's Guide to IT Value Methodologies | 60

It's entirely possible to quantify, qualify and prioritize the ways IT contributes to the bottom line. Here's a roundup of several tools to help you do just that. *By Tracy Mayor*

CIO/CFO RELATIONS

Get in Touch with Your Inner CFO | 70

How can the CIO and CFO quit arguing and come together? Who better to tell us than leaders who have lived both roles simultaneously. *By Derek Slater*

KNOWLEDGE MANAGEMENT

KM the Right Way | 74

A step-by-step approach that will ensure that your expensive KM system actually gets used. *By Simone Kaplan*

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CIO

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"Show me the money" may not be the right demand for e-business projects. *By Mohanbir Sawhney*

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A CIO in the insurance business shares his success with a management approach that relies on rotating IT staff around for different projects. *By Jeff Fields*

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Putting Content in Context

Digital asset management (DAM) software stores and organizes images, audio, video and other digital objects, making them easier to find, transform and reuse. And many companies are using DAM to provide a centralized way for employees and partners to locate and manipulate content—a big time-saver for all. *By Sari Kalin*

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As companies look for time and dollar savings by centralizing control of their multimedia assets, digital asset management is moving into the mainstream. *By Sari Kalin*

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You can't turn over the big-project responsibilities to someone else—it's up to you. *By Abbie Lundberg*

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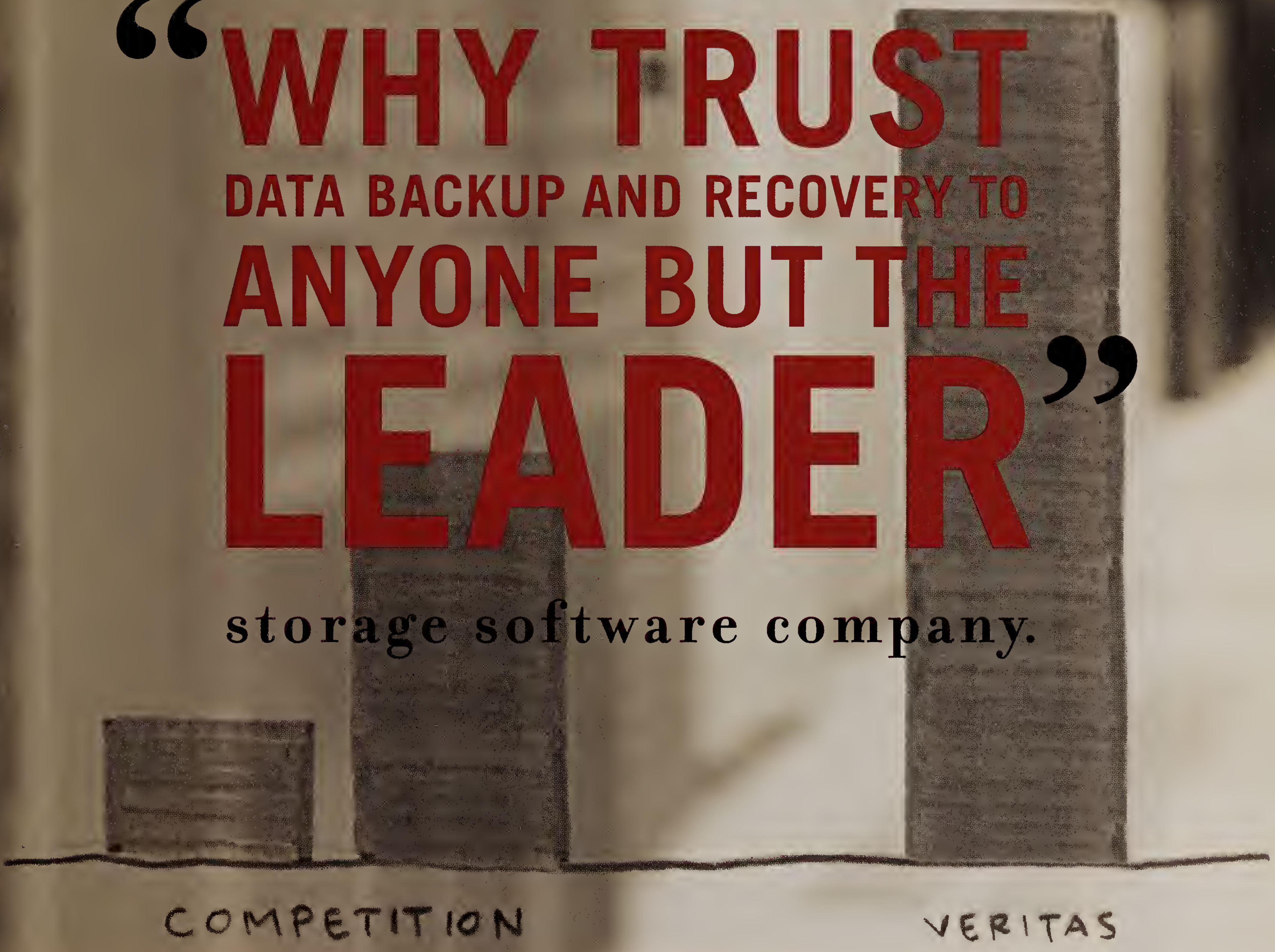
Abstracts of all the feature stories found in this issue.

> **"We've found that the matrix model is great for high performers because it allows them to stay challenged without getting bored. On the other hand, it puts more pressure on poor performers."**

–Jeff Fields, Peer to Peer columnist, on rotating staff based on project needs Page 40



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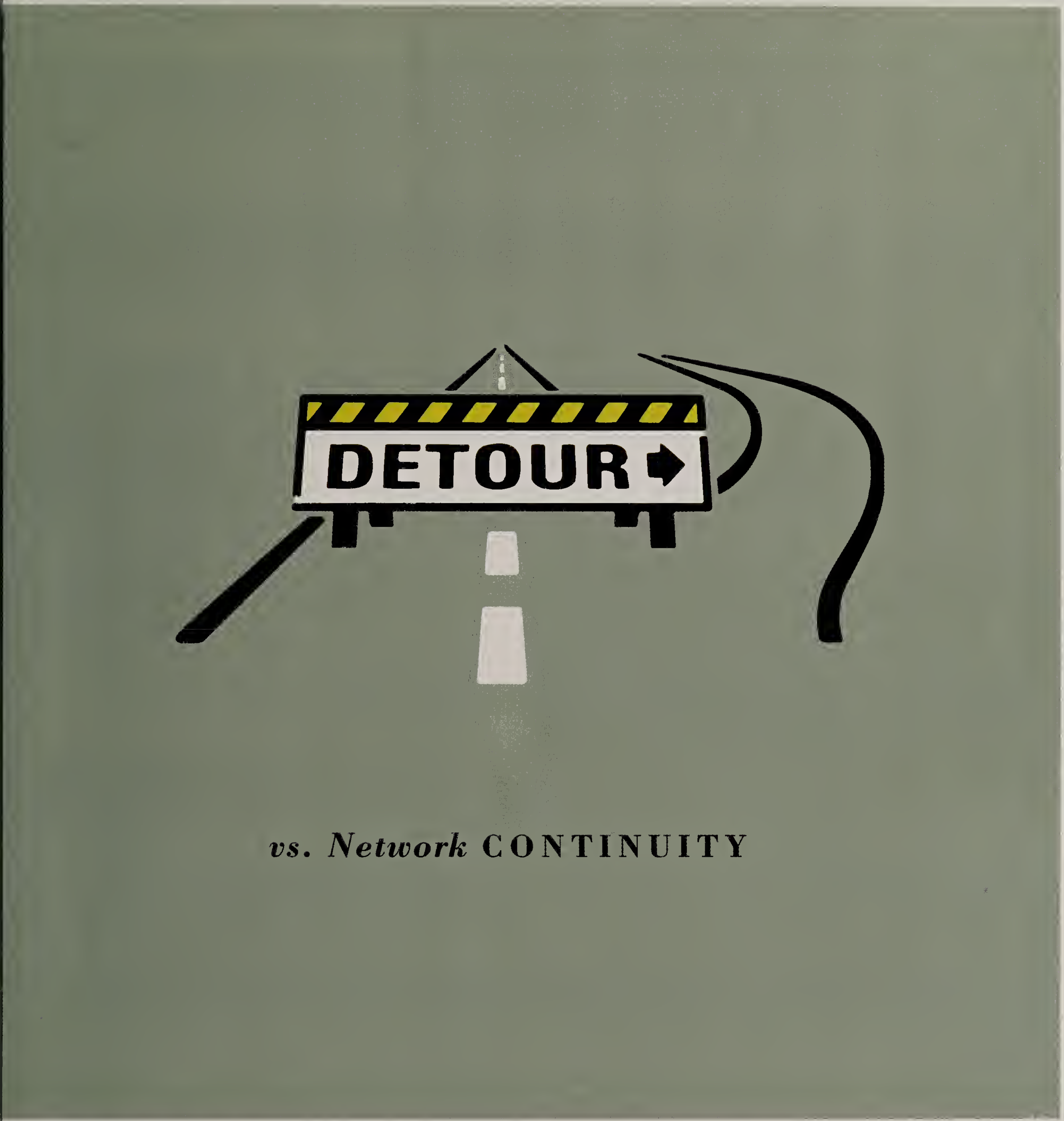

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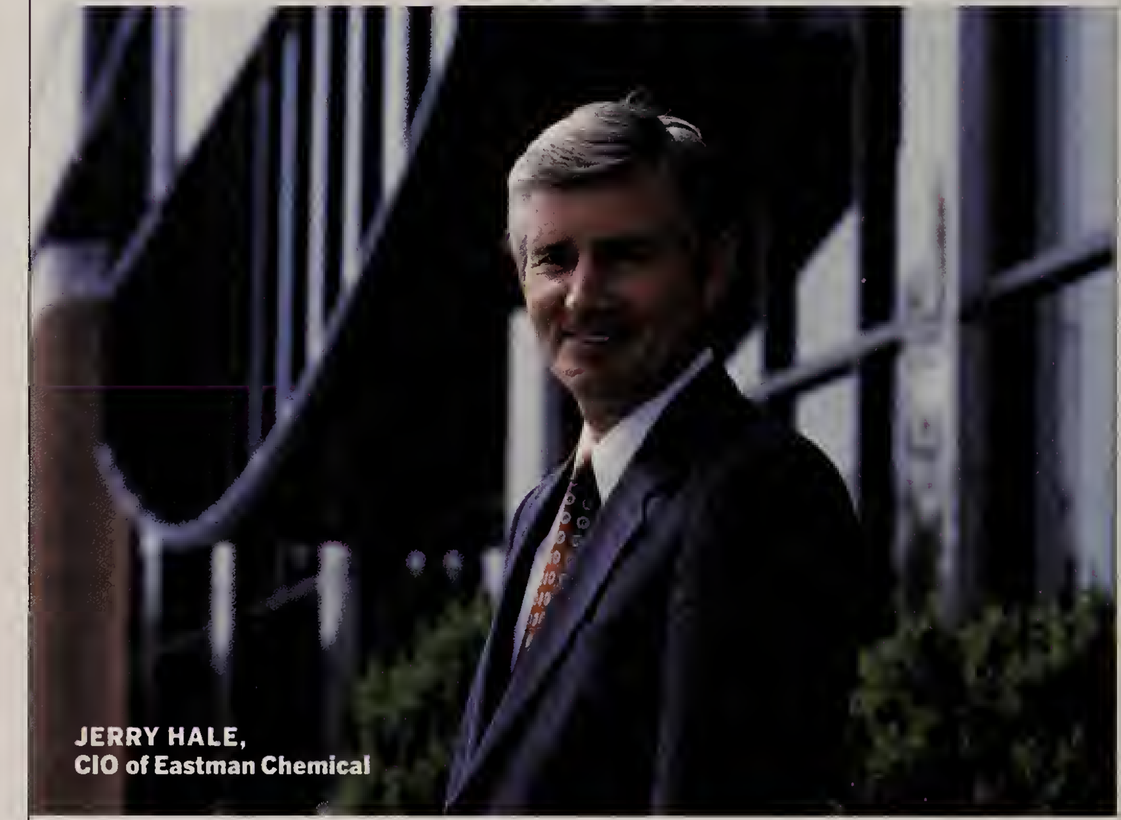

JERRY HALE,
CIO of Eastman Chemical

TALK BACK

Are you ready to say good riddance to consultants?

CIOs such as Jerry Hale of Eastman Chemical have just about had their fill of enterprise-implementation consultants' cost overruns and inexperience (**Take Control**, Page 46). They're fighting back by going smaller-scale and beefing up their in-house project management skills. What about you? Have you had it with the Big Five too? Tell us where you stand.

ASK THE SOURCE

How *does* a CFO think?

Vincent Laino should know. He's both a CFO and a CIO (**Get in Touch with Your Inner CFO**, Page 70). If you're having trouble talking to your CFO, talk to a CIO who really gets it.

Find links to the stories mentioned above in the **WEB CONNECTIONS** box at www.cio.com.

Get Linked

A Buyer's Guide to IT Value Methodologies (Page 60) outlines 10 approaches to proving tech worth. To find a list of links to each methodology's website, go to **www.cio.com/printlinks**.

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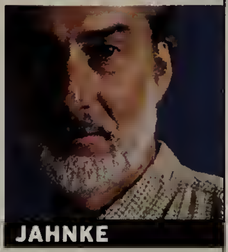

JAHNKE

MONDAY Tech Tact Technology Editor Christopher Lindquist covers what's coming.

TUESDAY Alarmed Security experts Sarah D. Scalet and Scott Berinato give you something new to worry about.

WEDNESDAY Metrics Web Writer Jon Surmacz makes sense of the numbers.

THURSDAY Sound Off Web Editorial Director Art Jahnke opines on ethical dilemmas.

FRIDAY The Big Picture Charts and graphs worth 1,000 words.

The Darwinmag.com Connection

E-mail the following **peer resources** to your nontechnology colleagues from *CIO*'s online sister publication, Darwinmag.com.

CIO's **And Now for the Good News...** (Page 54) outlines the lessons companies already in Chapter 11 have to teach. Darwinmag's **Five Thoughts with Seth Godin**, author of *Survival Is Not Enough*, tells why change is not a temporary thing and why change management is a bankrupt system.

CIO's **KM the Right Way** (Page 74) gives a step-by-step approach to assuring KM's success. Darwinmag.com's **Culture of Collaboration** claims that the biggest challenges are cultural and organizational.

To find these stories, go to **www.darwinmag.com** or **www.cio.com/printlinks**.

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From the Editor

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Do-It-Yourself IT

GIVEN THE OPPORTUNITY, most of us would opt to let someone else take responsibility for difficult and uncertain endeavors. It's human nature to avoid risk—it's been engineered into us since cavemen ran away from big scary beasts. There's also a certain amount of insecurity at play: We feel, deep down, that we're really just not that qualified for the job.

These inclinations are not reserved for pessimists or followers. I've been a "leader" all my life (class speaker in high school, captain of this, editor of that). But I still fight the impulse to defer to others when things get dicey. The impulse tells me not to put myself at risk (caveman instinct) and not to risk the success of the project (in the misguided belief that someone else will do it better).

So when someone with clout (say, the CEO) comes along with a hugely risky undertaking (for example, a multimillion-dollar ERP project) and brings along someone with a convincing story—and his own methodology!—to make it happen (like the Big Five partner he golfed with over the weekend), it would be an unnatural act for a CIO to step forward and assert ownership for that project. But that's just what CIOs are doing today.

This is leadership at its most fundamental level: realizing that someone else *isn't* going to do it better; that while you can and must draw on the expertise of your vendors and integrators, you can't turn over the helm.

That's the lesson of "Take Control," beginning on Page 46. The learning has been rough, with 40 percent of ERP projects failing to achieve their business case, according to a Conference Board survey last year, and more than 20 percent abandoned altogether. Costs have been on average 25 percent over budget, and annual support costs went up by 20 percent over the supposedly inefficient legacy systems the new technology replaced.

This isn't just a problem of ERP. Show me any three-letter technology solution (ERP, CRM, SCM, PDM...), and I'll show you a black hole waiting to suck in your company's resources.

What consultants do best is to understand how a technology works, learn from the multiple experiences of others and roll that up into something (a methodology) that can help guide you on your way. They can advise and transfer knowledge. They don't and never will understand the intricacies of your business model and processes. And despite what their marketing materials might say, their mission is not primarily to ensure the success of your business.

That's your job.

Abbie Lundberg

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> Well, of course, you can save on the hardware and software that is barely being used. But our data shows that 55% of IT costs typically go to internal personnel, with a further 10% to hardware and 10% to software; the rest goes to other items. Thus, the great potential here is for significant savings on IT staff through consolidation. You don't simply transfer the staff to larger systems because, for one thing, the larger systems are optimized to run more automation software, which is affordable in the consolidated environment. This is software that requires little or no human intervention, thus allowing lower staff costs. We think this is why just about every CIO today is thinking about consolidation.

Automation software ... requires little or no human intervention, thus allowing lower staff costs. We think this is why just about every CIO today is thinking about consolidation.

> *What about security in the consolidated environment?*

> It's just plain easier to manage security in the consolidated environment. If you have 10 servers versus 100 smaller servers, think of how much more manageable it is to do the frequent security software updates that are required today. You'll cut security administration costs potentially, and the CIO will have more confidence in the overall security of the servers, because the staff has fewer machines to focus upon.

> *Any other attributes of consolidation?*

> Partitioning is a big one. If you are consolidating disparate servers—those running databases that are vastly different from one another and don't "play" together well—you can place each database in a separate partition of a big server. If one fails, you don't crash the other. And with partitioning you can manage each of the database workloads through a single instance of the operating system.

> *In the consolidated world, are there good alternatives to UNIX?*

> The Intel platform with Microsoft Windows 2000 Datacenter has come a long way toward meeting the needs of many of what I call industrial-strength applications. Together they provide a large measure of the functional requirements, like availability and reliability, compared with UNIX. Reliability is key in the consolidated environment because the impact of a server failure is greater than it is in a more distributed environment. And just about every company has plenty of Microsoft technology already in the organization, so the staff skills are there to support this platform.

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trendlines

the **NEW** the **HOT** the **UNEXPECTED**

Edited by Lafe Low and Michael Goldberg

THE CIO ROLE

CIO: Automated

IN THIS ERA OF E-MAIL, e-commerce and e-procurement, the advent of eCIO software was almost inevitable. After all, the superhero stamina and crystal vision required of a CIO are just the sorts of things that cry out for automation and Web-enablement.

Although eCIO won't exactly let you retire to the golf course, the integrated real-time management control system developed by Genesys Automation will help you plan, track and manage an unlimited number of IT projects from a single executive dashboard. “Think of it as ERP for the IT function,” says John Hill, CIO of industrial gas manufacturer Praxair in Danbury, Conn.

Praxair used to rely on a number of tools (including Artemis, Excel, Lotus Notes and Microsoft Project) to track and manage IT projects. Last October, the company began using eCIO. Hill says eCIO offers a single repository that lets Praxair manage most of its core IT processes with a single tool. As project managers enter status updates into the system, both IT and business executives get real-time access to project information. That encourages the business to play a more active role in managing IT service delivery, says Hill. The single interface also helps Praxair's effort to standardize core IT processes. Hill expects to use eCIO as a knowledge management tool for IT as well.

The Java/J2EE-based eCIO system runs on an Oracle 8i database. Modules span the life cycle of IT project management from executive strategy development and portfolio analysis through business unit chargebacks in the general ledger. The module starts at $50,000, on either a per-seat or enterprise license basis. *–Alice Dragoon*

Praxair CIO John Hill enlisted eCIO to help him track his portfolio of IT projects.

PHOTO BY TRACEY KROLL

Department of BIG, Scary Numbers

19.8 MILLION: number of people who worked from home during the month of May in 2001 **17:** percentage of those 19.8 million home workers who are salaried and were actually paid for their efforts at home **3.4 MILLION:** number of people who had formal work-at-home arrangements with their employer last year **2.7 MILLION:** number of teachers (almost half of all teachers nationwide) who did unpaid work at home last year **57:** percentage of work-at-homers who did so to catch up or keep up **80:** percentage of home workers who used a computer to work at home **60:** percentage of home workers who used the Internet and e-mail while working at home

SOURCE: BUREAU OF LABOR STATISTICS

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1 This is the FOREMAN

2 That placed the Order

3 That went through the Dealer

4 That notified Contracts

5 That alerted Manufacturing

6 That checked with Accounting

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8 That sent the Delivery

9 That sealed the Process

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HOT TOPIC

I.T. SPENDING

Microsoft's Last Big Licensing Push

WERE YOU LUCKY enough to receive a white envelope from Microsoft in late April or May? The one a number of CIOs reported receiving that reminded them about the looming July 31 deadline to enroll in Redmond's Licensing 6.0 and Software Assurance upgrade plan? (See "The Meter Is Running," at *www.cio.com/printlinks.*)

Microsoft recently made what the company calls a final, $10 million, don't-say-we-didn't-warn-you push to reach corporate customers before it starts charging for software in a new way. The deal under Licensing 6.0 and Software Assurance: Customers pay a fee per year to use Microsoft software and acquire upgrades. Letting the license lapse means paying full price for the latest version of any Microsoft product, whether it's Windows or Office.

CIOs are not happy. According to them, Microsoft's new licensing plan is too expensive. One CIO at a midsize manufacturing company arrived at work one spring Monday to find the white envelope on her desk. "There's like five sheets of info. Pretty charts," says this CIO, who declined to be quoted by name. The numbers accompanying the charts weren't so pretty. Our CIO reports her midsize company would owe about $170,000 for 250 PCs using Office. "I'm not going to my CFO with *that,*" she says. Later, she shared the news with her Microsoft sales rep: "Forget it. I'm moving to StarOffice and Linux."

A week passes. A similar white envelope appears, this time on the desk of the company's CEO. "He's infuriated," she says. "He wants to know how they have the gall to ask for this much money for word processing." She gets executive buy-in on her Linux plan. A new plant-monitoring system will use thin clients on the shop floor—running Linux.

Microsoft officials say its mailings are just one part of an effort that has included 150 seminars for customers, conference calls with industry analysts and training sessions for its resellers on how to pitch the licensing program. Large customers are contacted a minimum of four times. "We want to do everything possible to make sure they aren't caught unaware Aug. 1," says Rebecca LaBrunerie, Microsoft's group manager of worldwide licensing.

Our midsize company CIO, though, refuses to enroll in Licensing 6.0 and Software Assurance. "I'd rather use Office '97 for the rest of my life if I had to," she says. But she doesn't have to. She has already begun testing systems running Lotus Notes and StarOffice, on Linux.

–Scott Berinato

INFORMATION SECURITY

Security Superheroes

ILLUSTRATION BY GETTY IMAGES

THINK OF THIS AS ROTC for security geeks. The U.S. government has started to award millions of dollars in scholarships to computer science students specializing in information assurance—ensuring data and systems are secure, private and reliable. In return for the scholarship, recipients agree to work at a federal agency for two years.

Congress allocated more than $11 million for the Federal Cyber Service program last year and the same amount this year (at press time, the White House is requesting additional funding). Critics of the program say it's far too little to protect the country's vulnerable IT assets. Only 54 students received scholarships last year (this year's scholarship awards have yet to be announced), but some of the funding has also gone toward helping universities develop information assurance courses and train faculty to teach them. "Of course it's too little, and of course it's too late, but that doesn't mean you don't do it," says Andrew Bernat, the program director at the National Science Foundation in Arlington, Va., and head of the cyberservice program. "Maybe half your cows have escaped the barn, but does that mean you don't close the barn door? Of course not."

Preston Gillmore is one scholarship recipient. The 53-year-old IS manager is a master's candidate at the University of Tulsa, where he's studying computer forensics and security. He hopes the cyberservice program will open the door to better job opportunities. "It's a field where few people venture and where maybe the rewards would be a little higher," he says. Gillmore's wife, Julie Evans, is also in the cyberservice program and due to graduate next year.

Gillmore has every intention of staying with the federal government after his two-year commitment is up. Such loyalty will be one measure of the program's success, Bernat says. "My real measure of success will be that nothing bad happens," he says.

–Sari Kalin

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Carolyn Purcell
Chief Information Officer, State of Texas

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Off the Shelf

Edited by Carol Zarrow

It's Sum- Sum- "Summary Time"

FOR MANY PEOPLE, one of the joys of summer is relaxing on the beach (or porch or deck or in the backyard hammock) with a good book. The characteristics that make for a "good book" depend on the reader, but odds are that many people's definitions won't include the business management titles that Off the Shelf usually reviews.

So, in the interests of freeing up time this summer—or any season—for reading just for fun and relaxation, Off the Shelf departs from its usual format this month to present instead a roundup of book summary services that may help manage the "ought to" reading that never takes the summer off.

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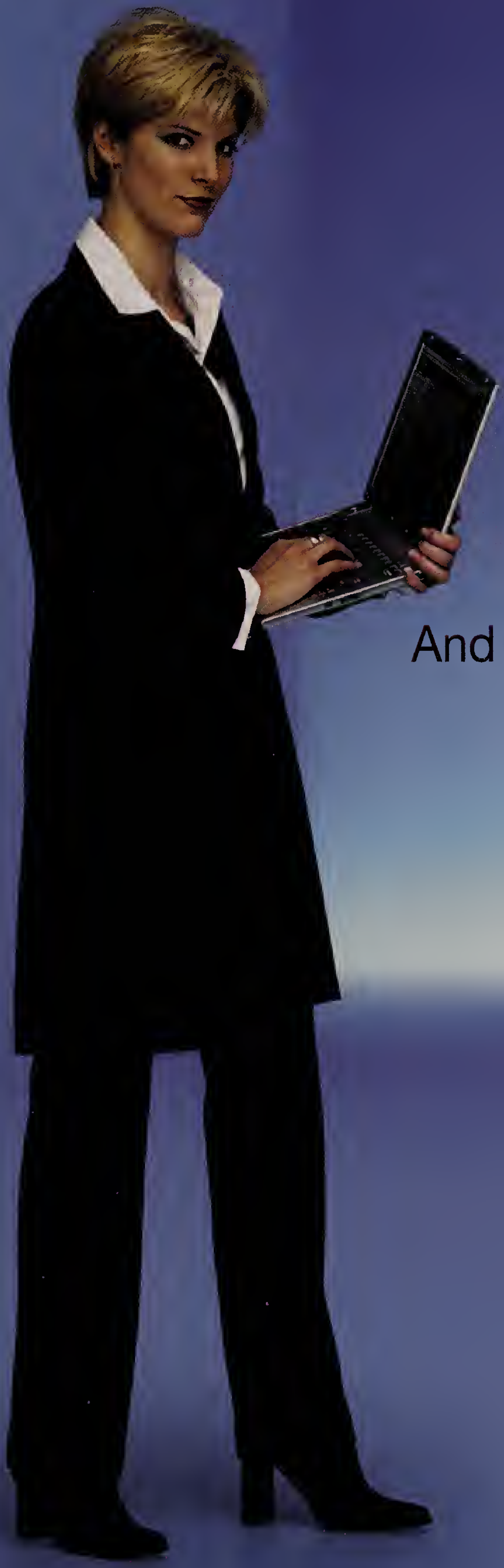

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PAYMENT PROCESSING

Check It Out

DESPITE THE BARRAGE of bank ads touting online bill paying and the ease of using debit cards, writing checks the old-fashioned way is still a popular method of parting with one's money. In the United States alone, about 50 billion paper checks are processed each year at a cost of $1 to $5 per check, according to the Federal Reserve Bank. Amar Gupta, for one, hopes to wring some of those processing costs out of the system.

As codirector of the Productivity from Information Technology initiative at MIT's Sloan School of Management in Cambridge, Mass., Gupta has been researching ways to streamline the check payment process using IT. A few years ago, he and his team of researchers devised a technology to accurately scan and read handwritten characters. The WinBank Optical Character Recognition System relies on character recognition algorithms and neural networks to read handwritten numerals on checks.

While the goal of the WinBank system sounds straightforward, the vagaries of human handwriting complicate accurate recognition. Gupta and his team had to account for different spaces between characters, overlapping characters, distinctions between commas and decimal points, and handwritten numbers like three and eight that often resemble each other, just to name a few of the myriad considerations.

By automating check reading, the WinBank system will facilitate and expedite the electronic processing of checks, thereby eliminating much of the human intervention the check clearing process now requires. As a result, says Gupta, the process will be faster and less expensive, even if paper checks remain a staple of the financial system.

However, Gupta acknowledges that numerous obstacles remain to widespread, international adoption of the WinBank system. For one thing, the speed of electronic processing will eliminate the ability to write floating checks (a check written just before the funds are available to cover it). Also, the worldwide financial system has no regulatory or operational standards, Gupta says, which further complicates widespread adoption. *–Megan Santosus*

LEADERSHIP

Real-Life Lessons from Rudy Giuliani

NO MATTER what you may think of Rudy Giuliani's accomplishments as mayor of New York City, no one disputes that he stepped up to the challenge of leading the city in the aftermath of Sept. 11. Now on the lecture circuit, Giuliani gave the following leadership tips at a user conference given by software vendor i2 last May 15 in Las Vegas.

Have a set of beliefs. "You can't still be wondering who you are and where you're going," he says, "because you'll get confused and go in all kinds of directions. Ronald Reagan was the same Ronald Reagan he was as governor, as president and when he left office. You may not have agreed with him, but you knew what his beliefs were."

Become an expert. "When people come to you to ask for advice and information because you know more about a subject than they do, that's a sign of great leadership," Giuliani says.

Be respectful. "People know when you're talking down to them, and they will not respect you," he says. Be forceful and honest but plain-spoken and respectful, he adds.

Discourage yes-men. Create a team that complements your strengths and weaknesses rather than mimicking them, he says.

Understand good leaders, not good leadership. "Read biographies of leaders you admire," he says. "That will tell you more about leadership than any leadership book." *–Christopher Koch*

E-COMMERCE

Value Added, Value Subtracted

By July 2003, if the European Union's finance ministers have their way, Internet sales of digital goods and services to European shoppers will be subject to a value-added tax (VAT). That means if you're selling online content to a consumer in Germany, you have to charge more to include the German VAT rate.

The rub here, according to U.S. officials, is that companies with offices in Europe pay the home-country rate. Vendors outside the E.U. pay the VAT rate based on where the consumer lives. U.S. officials argue these rules will put small U.S. companies seeking to grow global sales at a disadvantage. European online surfers already shopping U.S. websites probably won't be too pleased, either. Most U.S. companies selling digital products don't add VAT. *–Michael Goldberg*

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Washington Watch

Edited by Janice Brand

Privacy Opt-In or Cop-Out?

CIOS WILL HAVE more to worry about if a controversial bill that lets consumers sue companies that misuse their information continues to move through Congress.

In late May, the Senate Committee on Commerce, Science and Transportation approved the Online Personal Privacy Act, S. 2201, introduced by **Sen. Ernest Hollings** (D-S.C.), in a 15-8 vote. Under the bill, companies would have to offer opt-in consent for sensitive information posted online that will be shared with third parties. Companies would also be required to let users opt out of having their nonsensitive data, such as telephone numbers and addresses, given away. That means consumers would need to explicitly agree to having such sensitive details as their income, bank account number or sexual orientation passed on to a third party or collected for marketing purposes.

Sen. Ernest Hollings

If a company confuses how it filters the data and reveals a customer's sensitive information, that person could bring the company to court and collect up to $500. The thought of being tied up in court cases has some companies, and high-tech and business groups, including the U.S. Chamber of Commerce and the Software and Information Industry Association (SIIA), feeling queasy.

"We are concerned that a private right of action will create *less* certainty and clarity in the marketplace, as each court will supply its own definition as to what constitutes 'actual harm' or 'reasonable access' or 'reasonable security,'" said Barbara Lawler, chief privacy officer of Hewlett-Packard, at the bill's introduction hearing.

The committee made a few changes to the bill—the original amount users could sue for was as high as $5,000, and the revised bill exempts small businesses that have fewer than 25 employees and 1,000 customers who provide sensitive data online—but most of the language is intact. Along with citing their opposition to the bill's lawsuit provision, opponents told the committee that they are concerned that the bill doesn't adequately address how it will preempt state laws, and it addresses only online business while avoiding offline transactions. "[It] will create massive confusion and dramatically reduce confidence for consumers, enforcement agencies, self-regulatory bodies and companies implementing the rules," said SIIA President Ken Wasch in a statement.

Hollings limited the scope of the bill to information collected online because of consumers' immediate need to protect their privacy when dealing with the Internet, where identity fraud is becoming more commonplace and customer profiles are being sold to marketers, says Andy Davis, Hollings's spokesman.

On the House side, Rep. Cliff Stearns (R-Fla.) introduced a privacy protection act in early May that does not allow consumer lawsuits. In committee at press time, that bill addresses data collection for online *and* offline business.

–Sarah Johnson

Some Sensitive Definitions

HOW MUCH INFORMATION are your users willing to give? The Online Personal Privacy Act would require companies to treat sensitive and nonsensitive personally identifiable information separately. But what's sensitive and what's nonsensitive? The bill includes the following definitions.

Sensitive data cannot be collected and shared with third parties unless the user explicitly opts in.

- Medical data
- Race or ethnicity
- Political party affiliation
- Religious beliefs
- Sexual orientation
- Social Security number
- Sensitive financial information (includes income; account numbers, passwords and balances for financial accounts; insurance policy information; debt and loan obligations)

Nonsensitive data can be collected and shared with third parties as long as the company includes a notice at the time of collection that the user can opt out.

- First and last name
- Home or other physical address, including street name and name of a city or town
- E-mail address
- Telephone number
- Birth certificate number
- Any other information that would permit physical or online contact.

–S.J.

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SIMULATIONS

Robo-Patient Hits the Web

IT BREATHES, it has a heartbeat and a pulse, but is it alive? Not really—human patient simulators are filled with computer hardware and plastic tubes, so they "behave" like a person in the physiological sense. They exhibit a heartbeat and a pulse, simulate breathing, and produce sounds like heart murmurs and wheezing. Life-size plastic dolls like this have been in use by medical trainers for nearly 30 years.

These physiologically accurate models are being used more frequently by medical schools to provide practical training on how to diagnose and treat patients in emergency situations without the risk, according to Dr. Dag von Lubitz, chairman and chief scientist of MedSmart, a nonprofit based in San Juan, Puerto Rico, that develops simulation technologies for medical education. "Because the physiology [of the human patient simulator] is so correct, it forces your trainee to put their entire range of knowledge together in some logical sequence and act," says Dr. von Lubitz.

However, the exorbitant price tag, often as much as $200,000, prevents rural and remote communities, which often have the greatest need for good medical training, from getting access to such sophisticated technology. As long as those rural communities have access to a computer with an Internet connection and a Web browser, they can use these human patient simulators remotely via ASP technology developed by MedSmart. "We make these simulators available over the Web for free to physicians living in rural and remote areas who are entirely isolated from advanced medical training centers," says von Lubitz.

"This ceases to be a book exercise. If you perform inadequately or poorly, if you administer the wrong drugs at the wrong dose, that patient will die right in front of your eyes," von Lubitz says.

–Meridith Levinson

HEALTH

The Real Risks of Flying

THE FAA WOULD argue that improved airport security has made flying safer during the past year. However, more sensitive metal detectors and random security checks don't address the medical risks of flying—from stress symptoms and dehydration to more serious maladies like blood clots and radiation exposure.

When passengers are packed into coach-class seats like sardines, the lack of mobility can lead to blood clots. Dr. Peter Degnan, an integrative medicine physician at Equinox Health and Healing in Portsmouth, N.H., advises flyers to select an aisle seat for additional freedom of movement.

Since Sept. 11, the stress and fears associated with air travel have increased significantly. Degnan recommends relaxation techniques like deep breathing to soothe nerves.

One additional health risk is exposure to radiation, which is inevitable at the high altitudes that planes travel. The risk is more significant for airline personnel, who were actually reclassified by the FAA as radiation workers in 1996. For the average flyer, radiation exposure is both minimal and unpreventable.

–Daintry Duffy

This Date in IT History: **July 15-31**

1829 William Austin Burt of Mount Vernon, Mich., received the first typewriter patented in the United States on **July 23.** (It predated the qwerty keyboard by 29 years.)

1937 Italian Nobel laureate Guglielmo Marconi, known for his experiments in radio transmissions, died **July 20** in Rome at 63.

1947 The early Army computer ENIAC (electronic numerical integrator and computer) was rebooted on **July 29** after receiving a memory upgrade that took about seven months to complete.

1951 Dan Bricklin was born on **July 16** in Philadelphia. He went on to invent the VisiCalc spreadsheet for the Apple II while a student at Harvard Business School in 1979.

1962 A programming error (the omission of a hyphen in one line of code) caused the *Mariner I* spacecraft to fly erratically and prompted NASA to destroy it five minutes after its launch on **July 22**.

1992 Ken Olsen, founder and president of Digital Equipment Corp., resigns **July 16** from the company he founded in 1957 in Maynard, Mass.

SOURCES: *WWW.HISTORYCHANNEL.COM*, JONES DIGITAL CENTURY'S ONLINE ENCYCLOPEDIA, MARCONICALLING.COM, FEDERAL TRADE COMMISSION, NASA, WEBOPEDIA.COM, THE JOURNAL OF THE AMERICAN ORDNANCE ASSOCIATION, BEBOP BYTES BACK (AN UNCONVENTIONAL GUIDE TO COMPUTERS)

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Damn the ROI, Full Speed Ahead

"Show me the money" may not be the right demand for e-business projects

BY MOHANBIR SAWHNEY

ILLUSTRATION BY MELINDA BECK

IN TODAY'S HARSH economic climate, CFOs and CEOs are asking tough questions about the returns on investment from their e-business projects. They are confronting CIOs with the command that Cuba Gooding Jr. repeatedly says to his agent in the movie *Jerry Maguire*—"Show me the money!" Gone are the days when e-business projects would be approved based on faith, fear or greed. Nowadays, every such project has to be justified with a solid business case that includes an estimated ROI.

While the emphasis on accountability is laudable, companies may be making a mistake by jumping on the ROI bandwagon. Not only is the measurement of ROI for e-business projects an elusive goal, it may not even be the *right* way to think about measuring payoffs. By focusing solely on what is measurable and quantifiable in terms of dollars and cents, companies risk being precisely wrong instead of being approximately right.

It is easy to understand why ROI is popular. It is a simple concept that everyone can understand. ROI and its cousins (ROA, return on assets; ROIC, return on invested capital; IRR, internal rate of return; and NPV, net present value) are concepts that finance executives have traditionally used to measure performance. And, IT investments have conventionally been evaluated on ROI, measured in terms of cost savings attributable to investments in business process automation. So, ROI seems like a logical way to assess e-business payoffs.

The Pitfalls of ROI

While the simplicity of ROI is seductive, we would do well to heed the advice of Albert Einstein, who warned, "Everything should be made as simple as possible, but not simpler." ROI is a simple tool, but it may be simplistic in the context of e-business projects. Here are some of the biases that can result.

Bottom-line bias. ROI emphasizes tangible payoffs that can be measured in financial terms. Often, the easiest to measure returns are bottom-line improvements arising out of cost reductions. Consequently, ROI tends to favor projects that result in cost avoidance, at the expense of projects that prom-

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ise revenue growth. However, the only way to grow the bottom line on a sustainable basis is to grow the top line, which is easy to ignore if every project is measured on tangible ROI.

Inward bias. Investments in customer- and partner-facing initiatives result in more effective collaboration and translate into important productivity benefits for customers and partners. However, ROI measures only the returns that the company sees within its internal operations. By ignoring the value created for partners and customers, ROI may be missing the real point of e-business.

By focusing solely on what is measurable in terms of dollars and cents, companies risk being precisely wrong instead of being approximately right.

Unidimensionality bias. ROI requires that all benefits from a project be translated into financial terms. However, most e-business projects result in payoffs on multiple dimensions. For instance, a partner relationship management initiative may provide lower inventory costs (measured in dollars), faster order fulfillment (measured in time) and improved partner satisfaction (measured subjectively). Not all returns are financial returns in the short run, although they eventually may impact financial performance of the company.

Fixedness bias. E-business projects often follow the law of unintended consequences because they cross functional and enterprise boundaries, and may produce payoffs in ways that were hard to imagine at the outset. Cisco Systems' Connection Online began as a customer-care initiative. However, the forums proved an excellent tool for the new product development group to gain customer insight. The payoffs may accrue to marketing, in addition to customer care. An ROI calculation at the outset would have missed that point.

Immediacy bias. Most e-business initiatives take time to get accepted and widely adopted. Declaring failure or success based on a three-month or a six-month ROI may be misleading, especially for projects that demand significant change management.

Getting Beyond ROI

The key to escaping the ROI trap is to think strategically about the outcomes and the payoffs from e-business. Here are some prescriptions.

Focus on value. The anchor for any e-business project should be the *value created*. The business case should be anchored in a quantifiable and precise value proposition for internal and external audiences, defined in terms of benefits and in a vocabulary that is relevant to the audience. For example, when Eastman Chemical began its e-channels initiatives, it declared: "We will be the easiest company to do business with in the chemical industry." The proposition of "ease of doing business" needs to be translated into specific outcomes and measures, which then become the basis of measuring progress and performance. Focus on value created for *customers* as opposed to cost savings for the *company*.

Think broadly and softly. To avoid the unidimensionality bias, supplement hard financial outcomes and metrics with soft ones that may be more strategic in nature and may be important leading indicators of financial outcomes. Measures such as customer and partner satisfaction, customer loyalty, response time to competitive actions and improved responsiveness are examples of soft measures. And subjective measures can actually be quite objective if used consistently over time. For instance, customer satisfaction measured consistently on a five-point scale can be an objective basis for measuring the performance of customer-facing initiatives.

Pay your freight first. Think carefully about short-term wins that you can document to pay the freight for the initial investment in the project. For example, a telecom company found that it could justify its investment in data warehousing based solely on cost savings from data mart consolidation, even though the real payoffs from the project would come from lower churn and increased cross-selling opportunities.

Follow the unanticipated. Keep an open mind about where the payoff from e-business projects may come from, and follow opportunities that present themselves. Eli Lilly & Co. created a website called InnoCentive (*www.innocentive.com*) to attract scientists to solve problems in return for bounties. In the process, Lilly has established contact with 8,000 exceptional scientists. Now, the HR department has become very interested in this initiative as a talent pool. Sometimes, the detour becomes the main road. If you see one, take it.

In the heady days of yore, CIOs could get almost any e-business project approved because everyone else was doing it and nobody wanted to be left behind. Now the bean counters are back with a vengeance. However, by relying excessively on ROI as the tool for enforcing accountability, CFOs may be asking the wrong questions.

How do you measure payoffs from e-business? Write *netgains@cio.com*. Mohanbir Sawhney is the McCormick Tribune professor of e-commerce and technology at Northwestern University's Kellogg School of Management. He can be reached via e-mail at *mohans@nwu.edu*.

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The Mix and Match Method

A CIO in the insurance business shares his success with a management approach that relies on rotating IT staff around for different projects

BY JEFF FIELDS

ILLUSTRATION BY ROGER CHOUINARD

TWO YEARS AGO, the IT group at my company, a national think tank on workers' compensation insurance, faced a dilemma. One of the goals we had set for ourselves was to use our website to provide the best internal and external customer support and to deliver high-quality tools to our customers. What made it a challenge was the fact that most of our programmers spent much of their time supporting existing legacy systems, while most of the new product development was being done by external consultants. Our staffers were not getting the chance to build new skills so that they could take over our new Web-enabled platform.

To solve the problem, we adopted a matrix management approach, which essentially involves rotating people based on project needs. This model has brought significant benefits to our organization. I'd like to share with you how it works.

A Matrix in Action

Within our IT organization, there are four groups reporting to the CIO: the project management office, data center operations, application systems and quality assurance. Within each of those groups, there used to be several teams that served each of our company's three business units. So, within the application systems group, for example, there were subgroups for corporate systems, data systems and risk services. Each staffer was assigned to a particular business function; he worked on projects only for that group and never crossed boundaries.

With the matrix model, all that has changed. We have a total of 120 application programmers, and they now rotate among projects so that each person averages two large projects in a given year. For example, one programmer might spend part of the year working on a project to develop tools for our customers (Fortune 500 companies) to measure worker compensation levels, then be switched to an internal infrastructure project after that. The management team working with the staff decides who is available and has the necessary skills to work on a particular project at any given time.

During the course of a project, each application program-

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mer reports to the technical project manager assigned to that project. (In addition, each programmer also reports to a permanent manager who helps with personal training and development.) The technical project manager reports to a manager who has responsibility for the project. For example, one project involved building a pricing tool that would allow our customers to gauge how their own pricing structure stacked up within the industry. To do that project, we brought in the technical project manager from another technical team, and programmers were selected from other teams as well. The technical project manager reported to his own manager and to the manager in charge of the particular project. The developers also reported to two people: the technical project manager on the project and their own permanent manager. Despite this complex reporting structure, the project was delivered on time and budget, and our customers loved the new tool.

One of our biggest challenges was getting people to accept the need to work with different colleagues on each project.

Obviously, it takes a lot of cooperation to make this kind of matrix organization work. It takes a few projects and about eight months to a year to get everything smoothed out.

In the first year of using the model, we began by applying it across the application services group. To start, we prioritized the first set of projects and assigned to each a technical project manager and a business project manager, as well as the programming staff. Those initial projects ranged in duration from six months to a year. After we met with some success the first year, we then applied the process across all IT divisions, using the entire pool of programmers.

Keys to Success

One of our biggest challenges was getting people to accept the need to work with different colleagues on each project. Within IT, that was a difficult transition for some of our managers, who were used to managing the same people each time. A combination of coaching and experience over time helped us overcome the resistance. A similar phenomenon occurred among business partners, who also had become used to working with the same IT staffers on projects. In that case, the key to winning their acceptance was obtaining buy-in from senior business executives and achieving some early success on projects managed by a variety of people.

For programmers, we found it was critical to provide education about how the new organizational model worked and what benefits they would gain. One of the greatest benefits for programmers was the exposure and skills they would gain by working on different types of projects. Programmers were particularly concerned about performance evaluation and how it would work when they were no longer working directly for their regular managers on all projects. The way we handle this is by using roundtables to gather input from all the managers as well as incorporating customer feedback from the business team.

Selecting project teams is another area that involved some tricky issues. Now that each project enjoys a larger pool of talent to select from, our management team has to make sure to pick the right combination of business expertise and systems knowledge to make the project successful. It remains important to make sure a team "clicks," both internally and with the business partners. On some occasions we have had to make changes to teams, either for personal reasons or to acquire the skills a particular project needed.

In general, we've found that the matrix model is great for high performers because it allows them to stay challenged without getting bored. On the other hand, it puts more pressure on poor performers, who can no longer hide under a maintenance function or a single project.

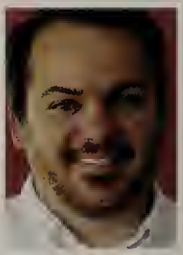
Sweet Rewards

Two years later, we're still pleased with our matrix organization. We no longer rely on consultants for development, and we use consulting resources only when needed to supplement a skill set or a team with too few people. Our programmers have actually learned more about our business, and we've received positive customer feedback about their deeper understanding.

The attrition rate for our staff has also improved. Before adopting the new structure, it was as high as 10 percent, but it's now down to about 3 percent. Staffers have said that they like having the opportunity to work on different projects with different people and getting exposed to different parts of the business.

Meanwhile, the delivery of all our benchmarking and customer data products is done through our website. We have actually reduced head count in our call center and driven down expenses as well as given customers the ability to serve themselves. In short, we have found a successful working model that we will continue to build on as we move forward and get more experience with the organization. CIO

Do you have ideas or lessons learned to share with fellow CIOs? Send them to Senior Editor Alison Bass at *abass@cio.com*. Jeff Fields is unit CIO of the National Council on Compensation Insurance's risk services division in Boca Raton, Fla. He can be reached at *jeff_fields@ncci.com*.



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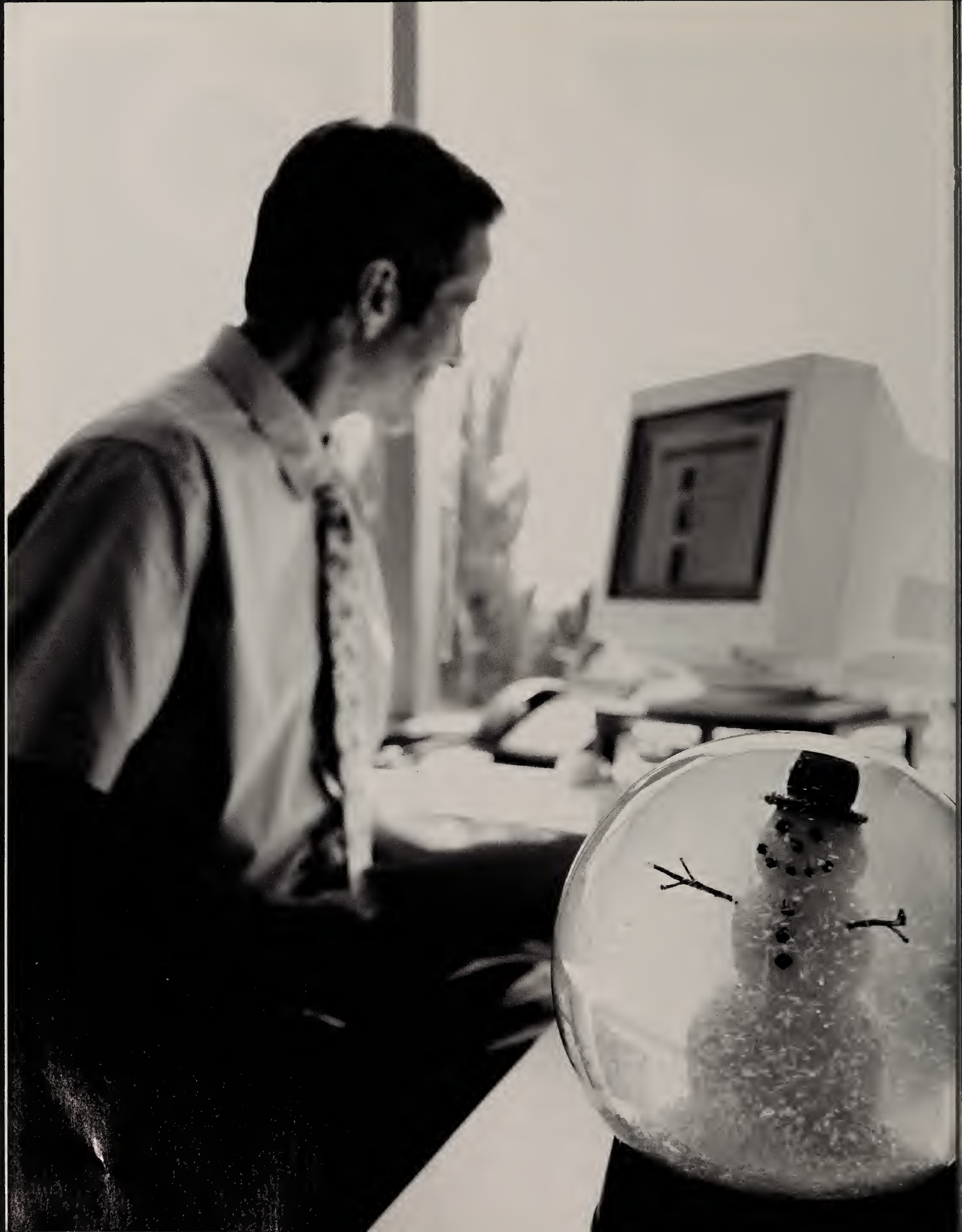

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CONSULTANTS: Can't Live with 'Em, Can't Live Without 'Em

It's Time To Take

Fed up with the failure of consultant-led enterprise software projects, many

Jerry Hale is giving the cold shoulder to the big consultancies that want to help him run his most important software projects. "I refuse to turn over the leadership of my ERP project to consultants," says Hale, vice president and CIO of Kingsport, Tenn.-based Eastman Chemical, which has 6,000 users of SAP's R/3 ERP software. He felt burned by a consultant-led ERP project in the mid-'90s that went over budget, over scope and far beyond the original project schedule. So when the time came to replace that system with a new one, Hale decided to use his own people to do the project along with a few handpicked consultants brought in to do small, specific tasks.

Reader ROI

- Learn why consultant-led megaprojects have a history of failure
- See how some CIOs are taking back control of major implementations
- Discover how you can get the most out of the consultants you do use

Control

CIOs are demanding more from the big consultancies or doing without them altogether

BY CHRISTOPHER KOCH

David Johns, senior vice president and CIO at Owens Corning in Toledo, Ohio, doesn't rely on consultants either. He and his IT staff now run Owens Corning's big software projects themselves, using consultants only for certain tasks.

Hale and Johns are not the only CIOs breaking with the way enterprise software projects were handled in the past—with armies of consultants from the so-called Big Five accounting firms. Many CIOs are now dividing these massive projects into smaller chunks, spreading them out over longer periods and either demanding more from, or doing without, the Big Five altogether.

CIOs are taking back control, in large part because they have no choice. These consultant-intensive megaprojects have a painful history of failure. In a Conference Board survey of ERP project managers released last year, 40 percent of respondents said they failed to achieve their original business case even after being live for a year or more. More than 20 percent shut down their projects before completion. For all companies, even the ones claiming success, costs were on average 25 percent over budget and annual support costs went up by an average of 20 percent over the supposedly inefficient jumble of legacy systems they replaced. Another survey, by consultancy Robbins-Gioia earlier this year, found that 51 percent of companies were unhappy with the results of their ERP projects.

And now companies are beginning to see a replay of the ERP debacle with CRM. A recent survey by Fujitsu Consulting found that two-thirds of the companies that had installed CRM software failed to become any more "customer-centric."

Though there are many reasons why projects fail, CIOs are now concluding that much of the fault lies with the pricing and delivery models of what used to be the Big Five accounting firms: Accenture (formerly part of Arthur Andersen), Deloitte Consulting, Ernst and Young (now Cap Gemini Ernst & Young), KPMG International and PWC Consulting. In a recent survey of IT and business leaders conducted by Peerstone Research in association with *CIO*, none of the Big Five rated better than a C in terms of the respondents' willingness to recommend them.

That is not good news for the Big Five. Their revenue growth has slowed in recent years (to 11 percent, 8 percent and 3 percent growth for PWC Consulting, Deloitte Consulting and KPMG respectively in 2000), while IBM's IT consulting division, which

> "If you use outside consultants to push change inside the company, people will resist it even more. Whatever change you want in the company has to be internally driven." –DAVID JOHNS, CIO OF OWENS CORNING

trailed them all in 1999, now has nearly 50 percent more consulting revenue than its nearest competitor, Cap Gemini Ernst & Young, according to *Global IT Consulting Report*, a Fitzwilliam, N.H.-based newsletter. Cap Gemini Ernst & Young's growth came mostly from combining operations in 2000, according to the newsletter. Of the Big Five, only Accenture maintained the growth rate that the Big Five had come to expect in the '90s. Outsourcer EDS's consulting division, though much smaller than IBM's, is also gaining fast on the Big Five, according to the newsletter, growing by 72 percent to $650 million in IT consulting revenue. Their customers are happier too. IBM received an A-plus rating in recommendations in *CIO*'s survey; EDS got a B-minus.

The resentment against the Big Five runs deep. Respondents to the Peerstone survey and IT executives interviewed by *CIO* claim the Big Five send them undertrained, underqualified people, and bill them at high rates. There is high turnover among these junior consultants, causing major disruptions in projects. CIOs also accused consultants of constantly adding in new work, blowing budgets and schedules. IT executives, it appears, are fed up with the way consultants get paid for every hour they put in on the project, regardless of whether the project is on time, on budget, or yields positive results.

With the Enron scandal forcing the Big Five accountancies to spin off their consulting divisions, the very survival of those divisions may be at stake. IBM is broadly diversified, EDS and Accenture are firmly rooted in outsourcing, but the rest of the former Big Five consultancies still rely on big engagements for a living. "There is a wholesale examination going on at these firms of the underlying principles that they operate under," says David Caruso, vice president and research fellow of Boston-based AMR Research. "That's the result of incredible push-back from users."

One thing is clear: The way these projects have gone in the past cannot continue if companies have any hope of getting a return on their vast investments—$40 million to $240 million for a typical ERP project in a Fortune 500 company, according to AMR Research. Even the consultancies agree.

David Johns and his IT staff now run Owens Corning's big software projects themselves.

"Western companies spent north of $300 billion on ERP since the mid-'90s, and if you put your hand on your heart, you can't say they got that back," says John Parkinson, chief technologist for the Americas for Paris-based Cap Gemini Ernst & Young, the second biggest IT consultancy in the United States. "You look at it and say, I'm not sure that was the best thing to do—at least not the way it was done."

A Good Deal, but Not for You

In the early days of consulting, a few experienced consultants would sit down and noodle business strategies for their clients. They would charge high hourly rates and expenses—known as time and materials in the business—but only for a limited period of time. Then big IT came along, bringing enterprise software projects that were huge in scale, fuzzy in scope and seemingly endless. Armies of consultants were unleashed on Fortune 1000 companies to install the systems and redesign work methods.

Such contracts have become the golden apple for consultancies because they mean big deals, and big deals mean many consultants at the customer's site, all usually working on a time-and-materials basis. The archaic time-and-materials billing method does nothing to help control the scope or length of these projects. The consultants get paid for every hour they put in on the project, regardless of whether the project is successful or on time.

The Big Five depend on these enormous open-ended projects to preserve their profit margin, which typically runs anywhere from 20 percent to 40 percent or more. "Consulting firms make more money and get better margins by selling big deals," says Christine Ferrussi Ross, an analyst for Cambridge, Mass.-based Forrester Research. "The more people you have on one deal the more your cost of sale goes down. You're not out there having to look for another deal."

Consultants are also rewarded for selling follow-on work to customers so that once the company gets its foot in the door, it can stay there as long as possible. KPMG calls this its client-for-life strategy, according to Mark Lee, senior vice president of product solutions for KPMG in McLean, Va. "Our intention is not to get into the client and stay forever on the project," he says. "It's building a strong relationship where the client looks

PHOTO BY JOE HARRISON

to us to be a trusted adviser."

But customers have lost patience with the foot-in-the-door approach, according to Denny Wayson, vice president and chief analyst of enterprise solutions at Gartner Dataquest IT Services in Stamford, Conn. "We don't think that vendors that use that approach are going to survive," he says flatly.

Worse, many of the consultants that arrive at a customer's door don't have the experience one would expect. "You get a mixed bag," says Craig Coggins, financial systems supervisor for Wacker Siltronic, a German semiconductor manufacturer, who worked with Deloitte Consulting on a recent SAP installation at Wacker Siltronic's U.S. factory in Portland, Ore. "You get some people who are very experienced and talented, and others who are intelligent, articulate people but don't really know the software and are learning as they go along."

Insiders call this the school bus effect. Born out of a drastic shortage of qualified people, the big consultancies began hiring young people fresh out of school. Though all big integrators hire youthful and less experienced consultants, Andersen Consulting (now Accenture) was best known for the practice. Eager to work the often egregiously long hours that these projects demand, the young consultants are trained quickly and armed with an explicit methodology—a sort of consultant's instruction manual—to help them get up to speed on enterprise software efforts.

Eastman Chemical's Hale says that inexperienced consultants were part of the reason his first ERP project was late and over budget. He felt the consultancy he hired was training its people on Eastman's time and dime.

Every big consultancy we spoke to for this story says it has scaled down the percentage of fresh-faced consultants assigned to enterprise implementations. According to James Hall, managing partner of technology and research for Accenture, which is headquartered in Bermuda, 70 percent of its current consultants have prior project experience, and 30 percent are junior-level people who may not have project experience.

10 Tips for Getting the Most Out of Your Consultants

1 **Who you see is who you get.** Consultancies will send their best people to sell you on an enterprise software project. But by the time you make up your mind to buy, those people may not be available. If you meet someone you really like during the sales process, name him in the contract to guarantee he will show up.

2 **Play golf.** Businesspeople buy enterprise software, not IT people. Build a relationship with the businesspeople who will sign the consulting checks so that you will have a say in the choice.

3 **Check the people's references, not the company's.** Make the consultancy give you customer references for the managers who have been assigned to you before you sign the contract. Talk with their past customers about specific issues in their performance. Did they miss deliverable dates? How did they deal with the situation?

4 **Ensure knowledge transfer.** If you want your internal people to learn from the consultants, write a specific employment contract with each consultant stating that they will remain until the employee they've been paired with has been fully trained.

5 **Get access to their methodology and understand it.** Many consultancies have internal project documents they share with each other but not with customers. Demand to see every document that relates to your project—including e-mails—and give your employees access to the website the consultants use for the project.

6 **Plan for business improvement, not systems installation.** Studies have shown that new ERP systems cost more to support than the systems they replace, so if you don't have specific benefits—reduced transaction costs or improved worker productivity—outlined in your contract, your project will not net much return.

7 **Screen every consultant.** Make sure you have someone on staff who is knowledgeable about enterprise software and can grill consultants to make sure they have the skills they represent on their résumés.

8 **Make them come back.** It can take companies months or even years to get a big enterprise software system working right. Insert a clause in your contract that brings the consultants back at a reduced rate if the stuff breaks down after they've left.

9 **Push for discounts.** Consultancies are willing to discount, especially in these tough times. Gartner found that 80 percent of consultancies it surveyed were willing to reduce their services fee by 10 percent to 20 percent for clients that will give them follow-on work, a big deal or agree to be a customer reference. But don't forsake the goals of your project for a discount. You'll pay more in the end.

10 **Plan for turnover.** Turnover among the consultants on big enterprise software projects is inevitable, so make sure you have an internal process for getting a new consultant the basic tools—a work area, a desk, project documentation and so on—so that he can get right to work when he arrives. *–C.K.*

The Yes Men

Even the most experienced and highly rated consultants have trouble delivering the changes in work methods that they promise at the beginning of these big enterprise software efforts. And when this transformation—promised first by the software vendors and seconded by the consultants—does not happen, customers are left embittered.

"We've invested $200 million in SAP so far, and we don't have much to show for it," says Derek Dyer, manager of global e-business for Deere and Co., the farm equipment manufacturer based in Moline, Ill. Dyer doesn't blame the SAP software for Deere's lack of return on ERP. He singles out one of the consulting firms on the project, IBM Global Services, for criticism.

"If the client *insists* on something that's a bad idea, then we'll do it."

–JOHN PARKINSON, CHIEF TECHNOLOGIST FOR THE AMERICAS, CAP GEMINI ERNST & YOUNG

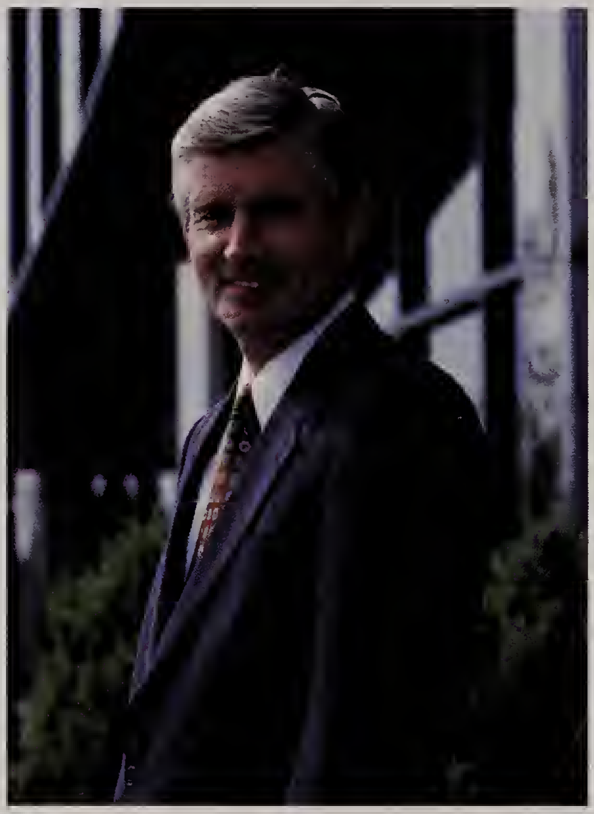
IBM Global Services was brought into Deere in 1999 to help make SAP the ERP standard across the company (some prior installations already existed). As part of the standardization process, IBM was asked to help transform some of Deere's more antiquated work methods. But when Deere managers resisted the changes, IBM Global Services backed off, according to Dyer. "In some cases, we wound up mapping SAP to our current lousy manual processes, which made things even worse," he says.

In areas where the broken work methods were left in place, the new system performed worse than the rats' nest of old spreadsheets it replaced, says Dyer. "The managers ran the shop floor on an Excel spreadsheet before SAP, and if something didn't look right in the data, they'd just go in and change it," says Dyer. "Well, SAP doesn't let you do that. It's tightly integrated, and if you try to doctor data, it won't flow correctly through the system."

In November 2001, Deere halted its plans to roll out R/3 across the company and fired IBM. Deere's new plan is to install ERP only "where it is absolutely needed," says Dyer. (IBM Global Services did not respond to repeated requests for comment.)

All of the consultancies we spoke to for this story acknowledged that business process improvements are the weakest link in big software projects. But they say that's often because their clients don't believe they need it or don't want to pay for it.

"A lot of times the client just doesn't want to do it," says Jeff Balentine, global leader of Deloitte & Touche's technology, media and telecommunications group in Dallas. "They see it as touchy-feely stuff, and they don't want to pay for it." But these companies are often the ones that complain about their projects when they are done, he says. "They get it done fast and cheap, and then they say, Where's the wow? We as consultants need to stand our ground and say we need to do the process improvements."



Jerry Hale, CIO of Eastman Chemical, says consultants were training on his time.

PHOTO BY MITCHELL KEARNEY

But to improve processes, you have to reorganize the company, and that creates tremendous internal resistance. "These projects create winners and losers inside the company," says Dave Duray, global SAP leader at PWC Consulting, which is headquartered in New York City. "Everyone signs on and then when you start to deploy it, the individual managers see that their administrative staffs are going to be taken away and centralized and they say, I don't want that. That's when management has to step in and be tough, and I don't think they have been. At that point [consultants] should stop and say, We're not going to do this. You're wasting your money."

But consultants won't walk out. "If the client *insists* on something that's a bad idea, then we'll do it," acknowledges Cap Gemini's Parkinson. As a result, he admits, "I don't know of any engagement where we were allowed to do everything necessary to guarantee the client's success."

Time to Push Back

But Owens Corning's Johns does not believe consultants can ever successfully drive change in a client's company even if they're given the mandate to do so. Johns learned this lesson the hard way. In 1997, less than a year into its SAP project, Owens Corning renegotiated the contract with Deloitte Consulting to take back control of the project. Owens Corning employees didn't want to listen to Deloitte. They wanted their bosses to tell them what to do, Johns says. So the new contract stated that project responsibility remained with Owens Corning and specified the roles and responsibilities of all consultants on the job and what they would be paid. Instead of paying them on a pure time and materials basis, the new contract stipulated that the consultants would get their hourly fees only after they delivered specific pieces of the project by certain dates. "The time payments got everyone's attention," says Johns.

The issues of cost and pricing create the most distrust between consultants and their clients. Wayne Hall, CIO of The Nautilus

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Group, a Vancouver, Wash., manufacturer of Bowflex, Nautilus, Schwinn and Stairmaster health and fitness products, sent out a detailed RFP for his ERP project and hired all five consultancies that responded, asking them each to do small projects that would feed the eventual ERP project. Despite spending months at The Nautilus Group getting to know the company and its processes, all five came in with bids of $3 million to $5 million, less than half of what Hall expected.

So Hall sent the RFP back to one company, Emerald Solutions, along with more information and detailed specifications. Emerald revised its bid to about $5 million. Then, after he hired Emerald, the estimate ballooned to $15 million. Hall believes the consultants purposely lowballed the initial estimates to get the job.

His CEO took one look at Emerald's bid, Hall says, canceled the contract and turned to Hall and said, "Wayne, you do it." Hall had to rebuild his IT department to staff the ERP project. He hired Deloitte (which also submitted a $3 million initial bid) to work on specific slices of the project.

Breaking the Consultant Habit

How can CIOs survive the enterprise software party without bad hangovers? Some major trends are emerging. It's clear that IT departments must build up their own project management capabilities. A strong internal project management capability acts as a check against the natural tendencies of the consultancies to grow projects and add new ones. In the Robbins-Gioia survey of companies that had installed ERP systems, those who had created in-house project management offices were successful 15 percent more of the time than those that did not.

Good internal project management is even more important in the current economy, when companies are scaling back their software projects and splitting them into smaller pieces. If the consultants work on small pieces of the project, the CIO must make sure the pieces all fit into an overall business strategy.

For CIOs who cannot afford to build an IT department to run an enterprise software project, pricing schemes provide the leverage that can keep their consultants in line, on time and under budget. Devices such as fixed-fee, revenue sharing and not-to-exceed limits act like invisible project managers.

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Are you ready to say good riddance to consultants? Let us know how you feel in **TALK BACK.** Find it at www.cio.com in the Web Connections box.

In fixed-fee engagements, consultants are paid a specific fee negotiated before the project begins. A recent Gartner survey reports that 62 percent of consulting customers called this their preferred strategy. But consultants don't like fixed-fee projects and will want to place rigid controls on project scope to make sure they can still make a profit.

> "A lot of times the client just doesn't want to do the necessary business process improvements."
>
> **-JEFF BALENTINE, GLOBAL LEADER OF DELOITTE & TOUCHE'S TECHNOLOGY, MEDIA AND TELECOMMUNICATIONS GROUP**

Such fixed-price contracts can work if CIOs clearly define the project up front, with a tightly fixed scope and set of deliverables. On big, unpredictable enterprise software projects, that is next to impossible to do. Big fixed-fee projects can easily dissolve into endless bickering over "change orders," time delays and scope changes. Consultants will also be tempted to cut corners if they're falling behind. Fixed price works best on small projects or on big projects that are broken up into small, clearly defined chunks.

Consultants, of course, much prefer time and materials, saying it lets customers change scope or goals when necessary without rewriting the contract. However, customer backlash has driven consultancies to come up with new pricing models to share risks and rewards with clients. One is agreeing to a lower hourly fee in return for sharing a piece of the cost savings it delivers to customers. Twenty-five percent of Gartner's consulting customer respondents said they would consider some form of shared risk and reward model, but just 4 percent of those surveyed said it was their preferred strategy.

To keep project costs from spinning out of control and yet maintain enough flexibility to achieve business process changes, a mix of time and materials and fixed cost makes the most sense. Time and materials with a not-to-exceed cap or time and materials with a contractual schedule for delivery of benefits are two popular options. For example, when Joseph Wolfgram, former CIO for the Bill and Melinda Gates Foundation in Seattle, hired a consultancy to help upgrade the Foundation to Windows 2000, he agreed to time and materials, but inserted performance milestones in the contract that specified the number of users that would be up and running by a particular date. If the consultants missed that date, they agreed to a reduced hourly rate until they got it done.

With the era of huge, open-ended enterprise software projects at an end, the Big Five will need to develop ways to make money on smaller projects while delivering the ROI their customers expect from enterprise software. It is a tall order. They have to deal with a legacy of mistrust from the first wave of big enterprise software projects, and a flat economy is making their customers more cautious and demanding than ever. If the Big Five can't develop new pricing and delivery models to drive the next phase of the enterprise software revolution—supply chain collaboration with customers and suppliers—they may not survive.

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And Now for the Good News...

Bankruptcy is a serious business. But CIOs who survive the **trials of Chapter 11** often find a clarity of purpose...and a chance to prove IT's value.

BY BEN WORTHEN

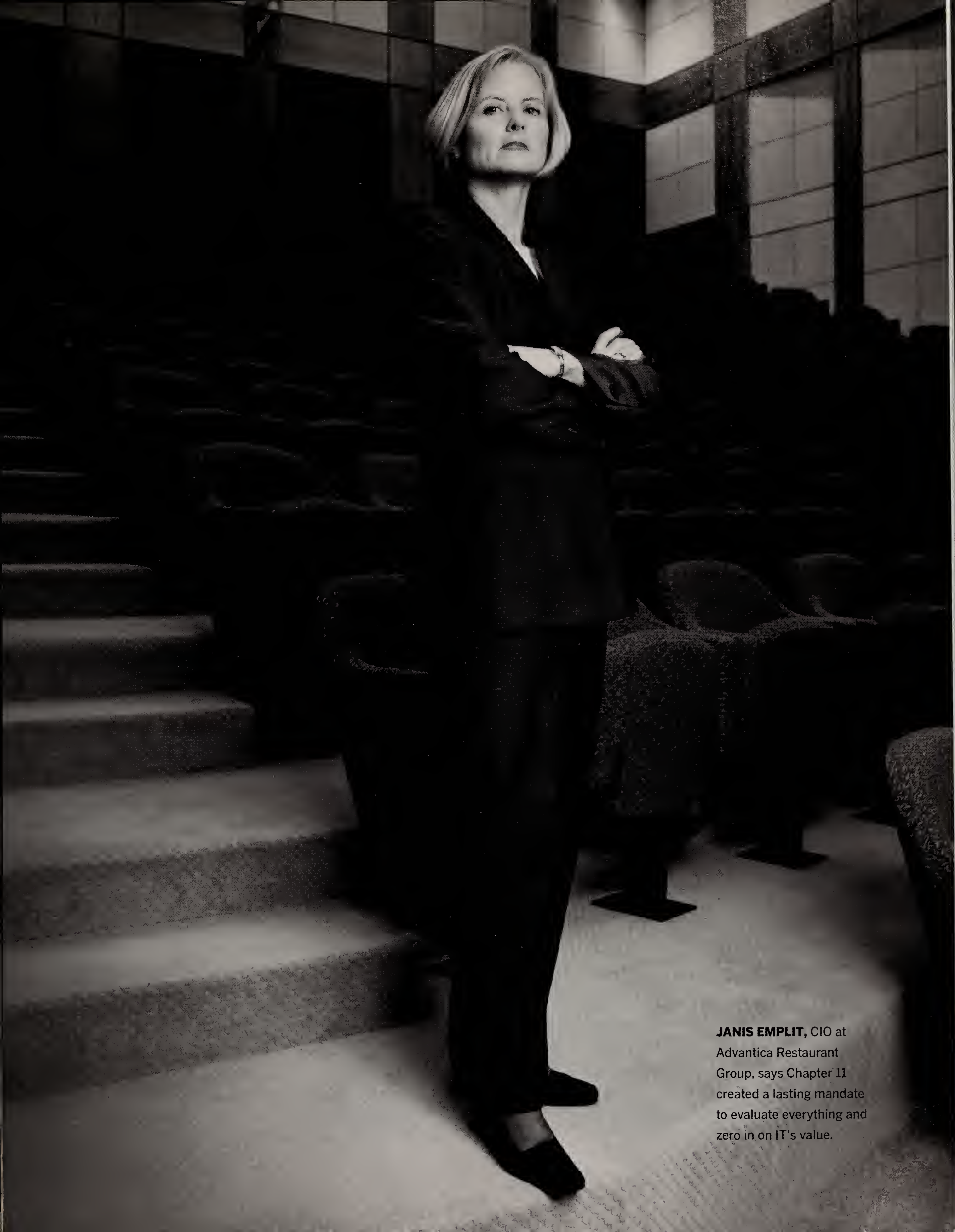
Reader ROI

- Watch CIOs at bankrupt companies assess what IT projects to keep
- Learn how Chapter 11 forces a company to reexamine all of its vendor contracts
- See CIOs make decisions on standardizing applications and consolidating vendors

On July 7, 1997, Janis Emplit started as CIO of Flagstar, the parent of Denny's and a handful of other restaurant chains. On Emplit's second day, the Spartanburg, S.C.-based company filed for Chapter 11 bankruptcy protection.

The restauranteur's financial woes (an $85.5 million loss for 1996) were no secret when Emplit signed on. Flagstar's bankruptcy, which had been in the works for four months before the new CIO took her job, was a last-ditch effort to restore to order what Emplit describes as a company in chaos, where the problems permeated IT. Flagstar's CIO left the company in 1996, and a lack of coordination reflected it. Each of Flagstar's six restaurant brands had its own homegrown systems for purchasing, inventory,

PHOTO BY MITCHELL KEARNEY



JANIS EMPLIT, CIO at Advantica Restaurant Group, says Chapter 11 created a lasting mandate to evaluate everything and zero in on IT's value.

point of sale, accounts payable and other functions. Even the corporate parent had three different general ledgers. And nothing was Y2K compliant. "We were playing catch-up," Emplit says in what now sounds like an understatement.

Starting when she did gave Emplit a mandate: Use IT to help turn the company around; do it fast and without spending a nickel more than you need. By the time the company reemerged from bankruptcy six months later, complete with the new name Advantica Restaurant Group, Emplit had reassessed everything her company did—and took part in deciding what it should do next.

The experience has stayed with her. The bottom-line impact of every decision "is always in the back of your mind," says Emplit. "You aren't constrained to go with the low-cost solution all the time, and I never felt like I couldn't do something. I just always felt like I had to make the right decision, and there had to be a return."

Something extraordinary happens to CIOs who go through a Chapter 11 reorganization. Clarity overtakes chaos. Circumstances force executives to confront questions that aren't as urgent when times are good. Aligning business and IT goals is not a to-do—it's now or never.

Last year, 257 publicly traded companies—with more than $256 billion dollars in assets—and close to 10,000 privately held companies filed for Chapter 11, according to Carter Pate, author of *The Phoenix Effect*, a study of corporate failures. Pate predicts that only 100 of the public companies will successfully emerge from Chapter 11 in the next 18 months. So far, 2002 has seen its share of bankruptcies. High-profile filings include Global Crossing, Kmart and Williams Communications, and Pate says he expects another 200 public companies to join them before the end of the year.

TOM SMITH, CIO at America West when it filed for bankruptcy in 1991, saw all IT project development at the airline stop.

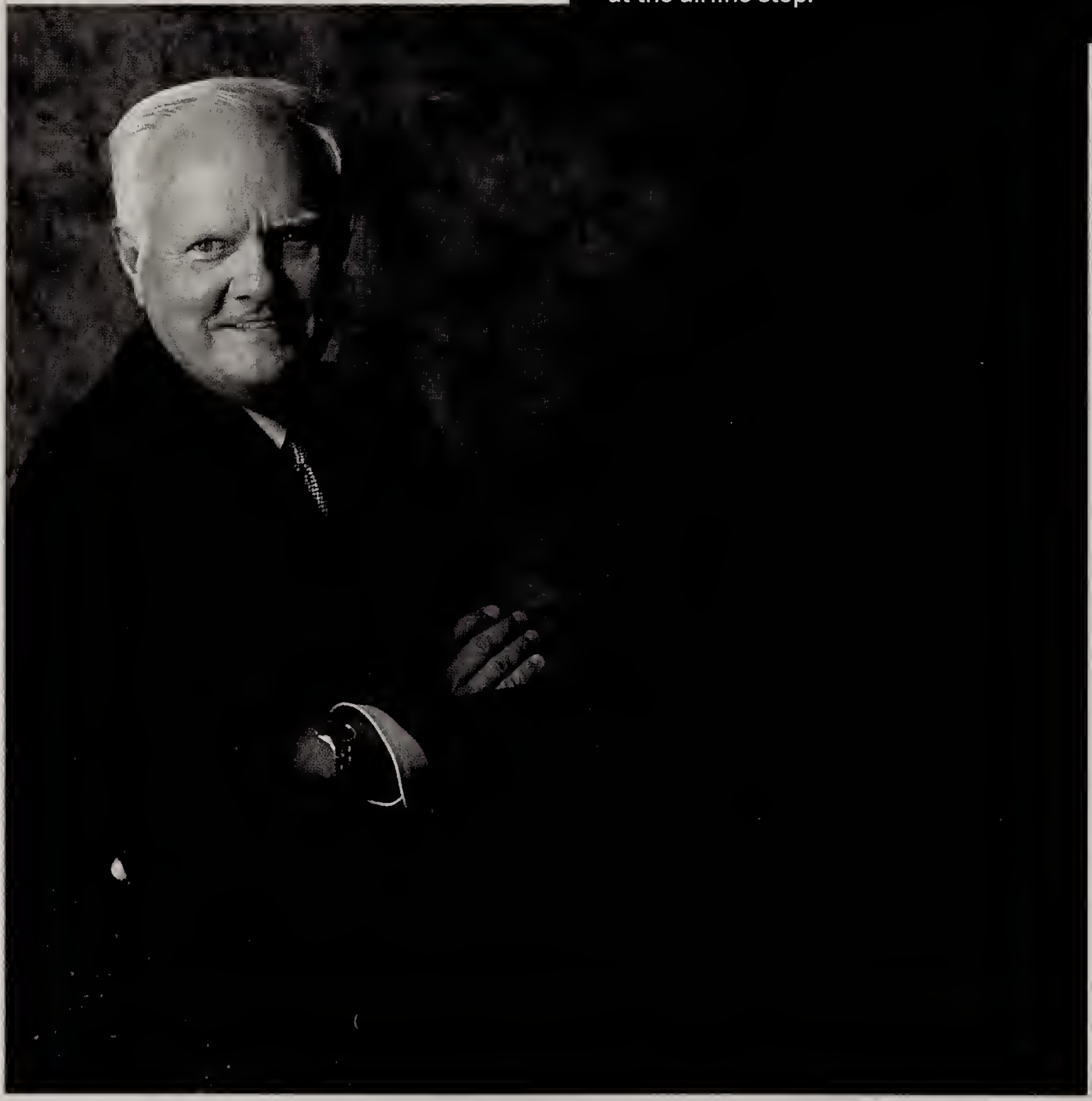


PHOTO BY DANNY TURNER

While U.S. bankruptcy law is two centuries old (see "A Critical Chapter in Business History," Page 58), IT's strategic importance in companies' reorganizations is a relatively recent development. Tom Smith, CIO of Waste Management, was CIO at America West when the Tempe, Ariz.-based airline filed for bankruptcy in 1991. Smith says that his former company basically "ran out of cash" and the IT department went into maintenance mode, ceasing all project development and laying off staff. Smith passed the time planning for the future—a future that took almost four years to come.

That's not how it's done today. Chapter 11 gives companies in crisis a chance to regroup, and IT plays a vital role. CIOs from currently or formerly bankrupt companies express a clear three-step strategy for emerging leaner and stronger: One, figure out where every dollar goes; two, plan out IT's strategic role in fixing the business; and three, subject that strategic plan to regular scrutiny.

CIOs who have gone through bankruptcy say that the experience teaches them how to do their job better. And they stress that there is little about managing a company through bankruptcy that they couldn't transfer to other businesses. With few exceptions, what they have learned applies to everyone.

FIND EVERY DOLLAR. And Shrink It.

When times are good, you and your vendors break bread. When you're in Chapter 11, you break contracts.

Through the late 1990s and into 2000, Federal Mogul was a thriving auto parts maker in Southfield, Mich., whose growth accelerated through a series of acquisitions. But the 1998 acquisition of auto parts maker T&N, formerly a British asbestos, insulation and piping company, proved to be Federal Mogul's undoing. T&N and several of its subsidiaries also bought by Federal Mogul were named in asbestos lawsuits. As word got out, the claims mounted. When the company filed for bankruptcy last October, 365,000 claims were pending.

Federal Mogul is using Chapter 11 to protect itself from the claims; the company plans to set up a trust for asbestos victims as part of its reorganization. One clause of the bankruptcy rules that Federal Mogul senior vice president and CIO Michael Gaynor says is helping the most is the court-appointed right to reject any current contract. “Take the example of a wide area network,” says Gaynor. “If you went into a contract 14 months ago, those costs have gone down anywhere from 10 to 15 percent. We can reject that contract and renegotiate because of Chapter 11.” And that’s exactly what the auto parts maker is doing. Federal Mogul is in the request-for-proposals stage for a new WAN contract, and is consolidating its PC leases with one vendor (down from five) to save a couple million dollars, Gaynor says.

Gaynor stresses that as a matter of principle he wouldn’t renegotiate a contract outside of bankruptcy, where judges require companies to break above-market leases.

Even so, the benefits of taking a fresh look at a vendor contract can go two ways, says George Muller, CIO of Imperial Sugar, a Sugarland, Texas, food company that came out of bankruptcy in August 2001. Muller says he has found that as long as there are mutual benefits—a reduced rate in exchange for a longer deal, for example—vendors are willing to play ball.

Regardless of their intention to break contracts, CIOs who have been through bankruptcy agree that compiling a comprehensive database that tracks all of a company’s spending is the first thing they would do if they started a new job tomorrow—whether or not Chapter 11 was a factor.

“With Chapter 11 there is a lot more information required than you would typically track inside a company,” says Gaynor. “You have to present stuff to the bankruptcy court, the creditors committee and in our case to the asbestos bar [a special court for asbestos suits]. So all of these people are asking for information that is not information we commonly worry about.”

Bankruptcy Is Not Always the Final Chapter

Most of the companies mentioned in this article have emerged from Chapter 11. Here’s a rundown:

Advantica Restaurant Group (formerly Flagstar)
Industry: Food services
Revenue: $1 billion
Filed for Chapter 11: July 1997
Out of Chapter 11: January 1998
Reason: Debt

America West
Industry: Airline
Revenue: $2.1 billion
Filed for Chapter 11: June 1991
Out of Chapter 11: August 1994
Reason: Debt

Federal Mogul
Industry: Auto parts manufacturer
Revenue: $5.5 billion
Filed for Chapter 11: October 2001
Out of Chapter 11: Still in
Reason: Asbestos litigation

Imperial Sugar
Industry: Sugar and confections
Revenue: $1.6 billion
Filed for Chapter 11: January 2001
Out of Chapter 11: August 2001
Reason: Debt

Kindred Healthcare
Industry: Long-term care
Revenue: $3.1 billion
Filed for Chapter 11: September 1999
Out of Chapter 11: April 2001
Reason: Debt

USG
Industry: Building materials
Revenue: $3.3 billion
Filed for Chapter 11: June 2001
Out of Chapter 11: Still in
Reason: Asbestos litigation

To meet the information requests, Gaynor built a data warehouse that tracks contracts, leases and other spending figures. It was an eye-opener: multiple vendors for the same products, redundant software licenses and bills from consultants who weren’t under contract. “We are going to use this for our own purposes to make better decisions about how we manage the business,” he adds.

CHART A STRATEGY. And Expect to Concede Some Points.

When times are hard, every dollar spent must promote company goals.

Emplit says that when she arrived at Advantica, she entered an alignment vacuum, with no IT strategy in place. Despite some pressing needs, such as fixing non-Y2K compliant systems, Emplit spent her first three months ranking IT projects in order of their overall importance to the company and mapping out the cost and timetable for each. For example, the first move Emplit made once the plan was completed was consolidating the restaurants’ financial systems, which solved the Y2K problem and had a clear bottom-line ROI. One project she delayed was installing a new benefits management system. The old one worked fine, so Emplit’s plan simply called for it to be Y2K remediated.

Even though creating the plan took precious time early in her tenure, Emplit says that the finished product gave her troops a clear understanding of the challenges ahead and how to attack them. In retrospect, she says, it was the best move she made.

Federal Mogul’s Gaynor says the auto parts maker should get out of bankruptcy in the next two to three years. But it won’t happen without the efficiencies generated by a detailed strategic plan that helps executives get control of IT projects across the company. The plan helps to focus matters on companywide benefits and allows you to set new priorities, Gaynor says. “We have X amount of money we are going to spend on IT, so let’s make sure that we are going to spend it on the top priorities for the company globally, not just for this plant or for this region. You might know that a project was costing you X, but it was also supposed to create Y cost savings," he adds. So if a project isn't living up to expectations, a CIO can take decisive action.

Decisive action, what USG CIO Jean Holley calls her accelerator pedal, is critical when the company's future is at stake. The Chicago-based sheetrock maker is another casualty of asbestos lawsuits (one of about 30 such companies that have filed for bankruptcy). "People say they are doing a project because they have it mapped out for this year," she says, "but you have to look at it and constantly ask, Is the timing right? It's like a stereo, it doesn't just have on and off; there is the volume [knob]."

For example, after the company's Chapter 11 filing, increased sales traffic forced Holley to accelerate a million-dollar mainframe upgrade by about six months. Waiting would have created problems for the product sales group, so Holley moved early even though it means "I will run in the red for a month or two," she says. Holley decided that she could chisel away at her software licensing contracts during the next few months. "My financials don't look great right now. But I can level it out," she says. The lesson, she adds, is to "stick with your strategy. Don't throw it out the window. We looked and said, What pieces need to happen regardless? And how do you speed up some pieces and slow down other pieces?"

REVIEW YOUR STRATEGY EARLY AND OFTEN. And Spend More Now If You Can Save Later.

Cutting spending and coming up with an IT strategy are the relatively easy parts to managing a company out of bankruptcy. You also have to make sure that every decision drives the business forward.

Kathy Markham, vice president of IS planning and architecture at Kindred Healthcare, says that the only time a struggling company should be spending is when there is a clear ROI. The Louisville, Ky.-based long-term care provider gets about 70 percent of its revenue from Medicare and Medicaid reimbursements. After a long period of lobbying and posturing, Congress cut the reimbursement rate as part of the Balanced Budget Act of 1997. Kindred was prepared for a 17 percent reduction. The cut was 30. The company was unable to meet its expenses, and in September of 1999 Kindred, then known as Vencor, filed for Chapter 11 (it came out of bankruptcy in April 2001).

A Critical Chapter in Business History

For 200 years, bankruptcy has helped businesses rebound

Chapter 11 is the clause of the Federal Bankruptcy Code that protects a company from its creditors, while giving it a chance to reorganize in hopes of a return to profitability. In Chapter 11, the day-to-day business is still run by the company's executive team, but the bankruptcy court must approve all major strategic decisions. In contrast, a Chapter 7 filing means that the company will simply liquidate its remaining assets and go out of business. (Chapter 13 covers individuals filing for protection from creditors. Earlier this year, Congress was considering reforms to existing bankruptcy law as it applies to individuals, but no action has occurred as of yet.)

In 1800, the United States passed its first bankruptcy law after rampant land speculation. It was repealed three years later. Over the next hundred years there were on-again, off-again bankruptcy laws as temporary responses to economic conditions. The Bankruptcy Act of 1898 was the first permanent set of laws to protect struggling companies from their creditors. Still, bankruptcy was rarely used until the Bankruptcy Reform Act of 1978 created Chapter 11. A number of high-profile filings followed, and the rest is history.

–B.W.

Even during its bankruptcy, Kindred went ahead with an aggressive SAP implementation. Despite the project's steep price tag, Markham says that the expected return was too high *not* to do it. "Sometimes it took us 45 days to close our books," she says. When that happens "there is a lot that can go wrong. When we did SAP we were able to cut the time it took to close our books from 25-plus days to 10." Other projects had benefits as well. A new patient-care reporting system had a built-in editor so that nurses could submit error-free claims to the government on time. "If you don't file in time you get the default rate, which is very low, and that can cost a lot of money," Markham says.

Even when projects have a clear return there are ways to curtail costs and still get them done. At Advantica, Emplit had to consolidate the company's accounts payable systems and general ledgers—the projects were first and second on her plan—but she did it with an eye toward frugality. That meant choosing the cheaper Lawson ERP system over the more widely used SAP. "You have the Cadillac solution and the Chevrolet solution, and you don't go for the Cadillac when you are in bankruptcy," says Emplit. The same logic steered her other moves: She replaced the legacy inventory system for two of the restaurant chains but delayed replacing the other four and is only now installing a Lawson HR module.

At USG, Holley says executives used Chapter 11 to reevaluate an ERP project conceived prior to the filing. The goal was to migrate off legacy systems toward an Oracle ERP system that integrated accounts payable, general ledger and procurement applications. It turned out that the project's benefits—such as shorter business cycle times—made it more important, and USG decided to expedite it. To do that, Holley had to pull in implementation dates. And she chose not to do the complex accounts receivable portion of the project, and decided that USG would do it right out of the box and not use consultants.

"Some of the customization that we wanted to do was in the area of procurement," says Holley. "It would be nice if it followed our procedures, but if you do it once you will have to pay for it forever." Looking through her cost-cutting glasses, she determined that preserving a traditional business process wasn't worth the expense. Time was also important. A customized installation would drag on, whereas doing it out of the box allowed them to finish the project in August, only a year after it began. "When you look at the price tag it makes you realize that you don't really need to do it," Holley says.

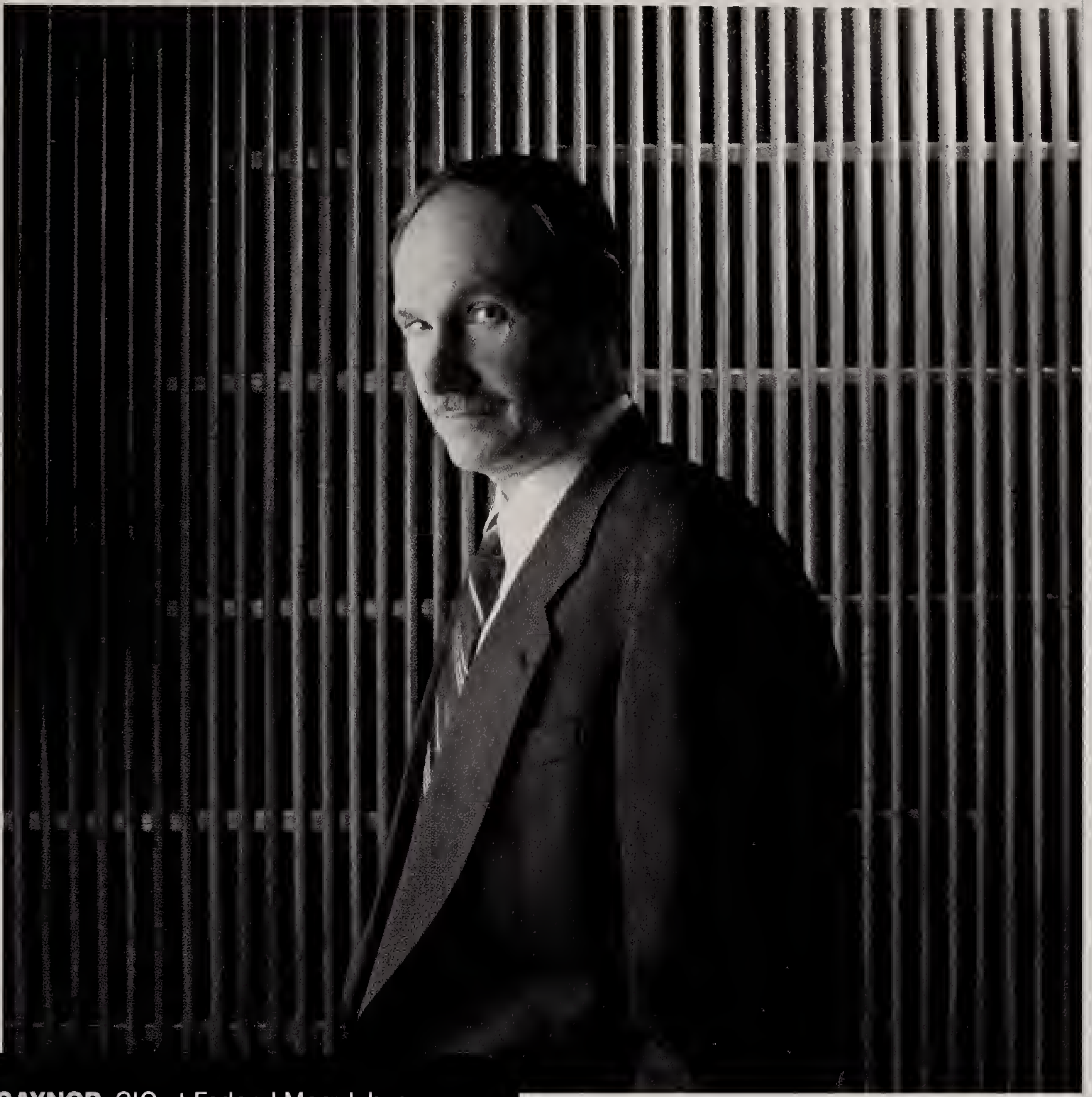
That's also the approach at Federal Mogul, where CIO Gaynor is depending on EAI technology to help alleviate ERP costs.

The company has "many, many" different types of ERP systems, and has a long-term strategy to standardize on two, SAP and MFG Pro from Carpinteria, Calif.-based QAD. Now, says Gaynor, "we wouldn't do that. If we had a system that was running well right now, we wouldn't take it out just to get common." If an existing system was dying, Gaynor would replace it with one of the two standards, but otherwise he'll leave it alone. "EAI technology is getting to where you can pull all the information from different sources together. Three years ago you couldn't have done that. To replace an ERP system, you have a lot of expenses that we are not going to do right now. We would rather go with the EAI and pull that into a repository."

CIOs who are part of the executive team and have input into a company's overall strategy are already in a position to take the steps mentioned in this article. But even if there's a chance to replicate only one step, consider that charting the numbers that show the costs and benefits of IT projects make a compelling argument in any business climate. Compiling a database that tracks spending across the IT department and eventually an entire company is not a giant investment. "If you spend a little bit of time looking at the numbers, you can easily reduce the spending 16 to 20 percent," Emplit says. That's the kind of argument that's hard for a CEO to ignore.

Resisting the temptation to invest in Band-Aids also is critical. It simply doesn't help move the company forward. Aside from the ability to break contracts, there is nothing about running an IT department in a bankrupt company that differs from running any other company. The stakes are just higher. In fact, Gaynor says that he is "running the department exactly the way we want to run it," and that when he emerges from bankruptcy in two or three years, he won't change a thing.

"There are so many dollars out there," says USG's Holley. "If you have good insight and control over them, your ship is going to run real tight. If you don't, you are leaving money on the table, and you are sloppy." CIO



MICHAEL GAYNOR, CIO at Federal Mogul, has used his company's bankruptcy to retool some contracts and get IT management on solid footing.

PHOTO BY DAVID BADITOI

PEER RESOURCES

Change Is Not a Temporary Thing

FIVE THOUGHTS ABOUT CHANGE MANAGEMENT with Seth Godin from our online sister publication, Darwinmag.com, explores how companies and managers must evolve. To e-mail your colleagues a copy, go to www.cio.com/printlinks or www.darwinmag.com.

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A Buyer's Guide to I.T. VALUE METHODOLOGIES

It's entirely possible to quantify, qualify and prioritize the ways IT contributes to the bottom line. Here's a roundup of several tools to help you do just that.

BY TRACY MAYOR

When a company buys a new fleet of delivery trucks, it can predict with reasonable accuracy how much more revenue it will generate by delivering more goods more quickly to more customers. That can make it easier to justify the investment. It's rare, however, to find a CIO who can produce similar numbers for IT investments.

"As recently as two years ago, companies made IT investments to reduce cost, enhance productivity or solve specific business challenges," says Thomas Pisello, president and CEO of Alinean, an Orlando, Fla.-based valuation consultancy. "Now with today's economic climate, CIOs are under a lot of pressure to justify that budget and put a measure on value that may not be obvious."

One way to make the value of IT more obvious is to adopt a logical, repeatable framework—a valuation methodology. This framework helps identify and nurture those investments that ultimately contribute directly to the financial health of the organization. CIOs who have adopted these models say that they help establish a clear connection between IT and business strategy, link technology initiatives to shareholder value, facilitate negotiations with the CFO, and ultimately help them get more money for IT and spend it where it does the most good.

IT managers have it especially difficult when the business discussion moves from the subjective to the objective. Technology investments are often more expensive than they first appear, and the value they deliver is more difficult to measure. "IT buying is fundamentally more complex because of the range and quantity of inherent hidden costs and soft benefits," says Pisello.

For sanity's sake, we've divided the major methodologies into three categories: traditional, qualitative (also called heuristic) and probabilistic. Some techniques, like Economic Value Added (EVA), are more akin to building blocks than methodologies. Others, like Balanced Scorecard, try to be full-blown performance-management systems that cover everything from goal setting to incentive compensation. Whatever methodology you choose, keep in mind that the overarching goal of valuation is simple—to draw a direct line between IT investments and the enterprise's bottom line.

Traditional Financial Methods

These methodologies have their roots in the world of financial measurements, with IT-specific metrics and attempts at risk assessments.

▶ Economic Value Added (EVA)

"Net profit minus the rent."

Nuts and Bolts: As a metric, EVA equals net operating profit minus appropriate capital charges. Simply put, when managers employ capital, they have to pay for it, explains Gregory Milano, partner and management committee member in the EVA consulting practice of North America at Stern Stewart & Co., the New York City-based developer and promoter of EVA. By assessing a charge for the use of capital, EVA encourages managers to monitor assets as well as income, and keeps them aware of the trade-offs between the two, Milano says. If you're evaluating a new ERP system, for example, EVA requires that you factor in all investments, including initial cash outlays, maintenance, and internal and external training costs, and take those as a charge against anticipated benefits, which might be increased revenue or reduced costs.

Using EVA as a yardstick to assess the performance of individual departments, including IT, on a monthly, quarterly and yearly basis can help with decisions on new projects. Conflicting and confusing goals (like revenue growth, market share or cash flow) are replaced with a single financial measure for all activities.

BancorpSouth has had success in eliminating multiple goals. "In the past, we looked internally at growth goals, efficiency ratios, pricing margins, market share and of course, on the external side, earnings per share, but there were no capital considerations. People would make decisions to get growth volume and wind up losing their shirt," says Will Newcomer, senior vice president of MIS at BancorpSouth, a six-state bank headquartered in Tupelo, Miss. By putting Hyperion Solutions' EVA calculation tool on each branch manager's desk, BancorpSouth can tell branches that they need to hit income goals and make back the cost of their capital—but still give them the autonomy to do it their way.

Word of Mouth: EVA is a good way to gauge the top-level impact of IT, says Alinean's Pisello, but it's difficult for many IT organizations to connect that high-end view with something like the purchase of a new server without using intermediate measures. BancorpSouth may be in the minority by using EVA as a full-blown valuation framework. Other companies feel more comfortable using it as a single metric that plugs into another valuation methodology.

Time and Money: As little as three or four months for small companies with clear financial data; a few years for full implementation in large, complex companies. Cost is commensurate with the size of the company and project, says Milano.

▶ Total Cost of Ownership (TCO)

"If you're already too cost-focused, TCO will just dig you in deeper."

Nuts and Bolts: TCO is an efficiency measure best used for helping service-oriented departments like IT squeeze better price and performance ratios out of key business processes such as operations, disaster recovery, change management and tech support.

Responding to a client query in 1986, Gartner's Bill Kirwin and others set out to calculate the ongoing costs of procuring, administration, setup, moves/adds/changes, tech support, maintenance, peer support, downtime and other hidden costs of owning a PC. "We said, Let's take a holistic view of costs across enterprise boundaries and over time," says Kirwin, now vice president and research director at Gartner in Stamford, Conn. "When we added it all up, it was pretty surprising. Nobody believed the numbers at first, not even internally at Gartner."

They do now. TCO has become a way of life for many technology managers who like its dispassionate analysis of new products and upgrades. Hardware manufacturers can increase sales by building TCO-reducing features into their products that reduce maintenance and support costs.

Word of Mouth: TCO does an excellent job of providing a current cost benchmark, and it works well for analyzing a narrow function or series of functions. When combined with best practices benchmarks, it can make a good framework for assessing and controlling IT spending. TCO does not assess risk or provide a way to align technology with strategic and competitive business goals.

Even Gartner, which developed TCO, acknowledges it isn't a silver bullet, but rather an efficiency metric that works well when plugged into the financial perspective of a Balanced Scorecard or other qualitative methodologies. Gartner is working on a broader version of the methodology called Total Value of Opportunity (TVO) that has a greater emphasis on investment performance.

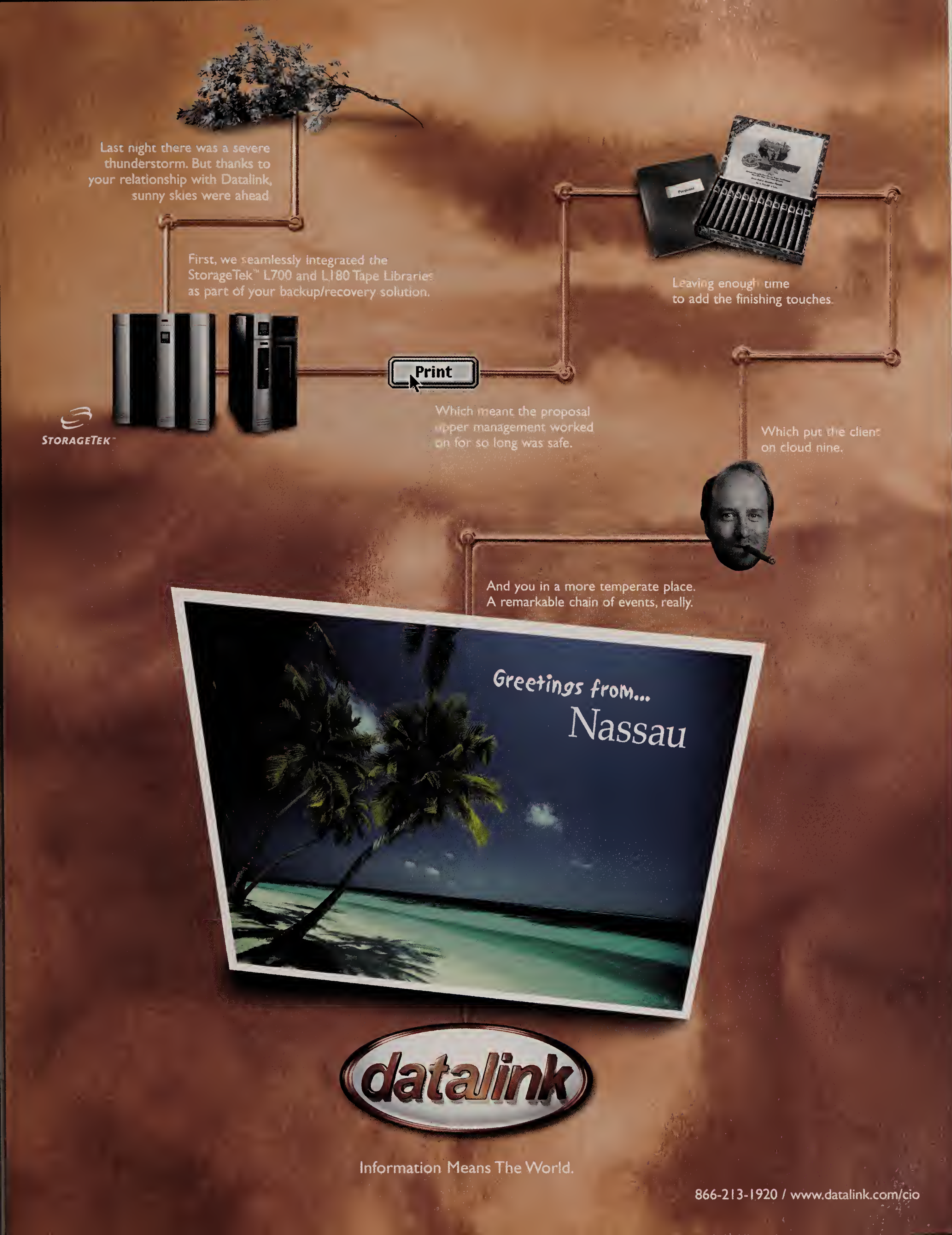
Time and Money: Between eight and 16 weeks; anywhere from $30,000 to $50,000 on the low end.

▶ Total Economic Impact (TEI)

"It's better to build layers on top of an organization's existing toolkit than to drop in something brand new."

Nuts and Bolts: Total Economic Impact is a decision-support methodology designed to accommodate risk and something Giga Information Group Research Fellow Chip Gliedman calls "flexibility"—deferred or potential benefits often left out of straight cost-benefit analyses.

In analyzing expenditures, IT managers



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assess three key areas—cost, benefit and flexibility—and determine risk for each. Cost analysis takes a TCO-like approach in considering ongoing costs in addition to capital expenditures. This tends to be an internal IT measure. Benefit assessments look at the project's business value and strategic contribution outside of IT.

TEI calculates flexibility using a futures-options methodology, such as Real Options Valuation or the Black-Scholes model, both of which attempt to value options to be exercised later. For IT investments, risk considerations include the availability and stability of vendors, products, architecture, corporate culture, and size and timing of the project.

It doesn't matter which calculations a company uses, provided it is analyzing all three categories and assessing risk for each, says Gliedman. "It's better to build layers on top of an organization than to drop in something brand new," he says.

Word of Mouth: TEI works best when analyzing two distinct scenarios (build versus buy or Oracle versus Sybase), particularly when those two choices involve infrastructure or other enterprisewide projects whose benefits are notoriously hard to pin down. Some measurement experts, including Technology Decision Modeling's Don Hinds, aren't thrilled with the subjective, nonstatistical nature of TEI's risk-assessment component.

Time and Money: Five days to two months; $20,000 to $30,000 on the high end.

▶Rapid Economic Justification (REJ)

"Truth and beauty of the numbers."

Nuts and Bolts: Like TEI, Microsoft's Rapid Economic Justification seeks to flesh out TCO by aligning IT expenditures with business priorities. The five-step process requires IT to: develop a business assessment road map identifying a project's key stakeholders, critical success factors and key performance indicators; work with stakeholders to identify how technology can influence success factors; perform a cost-benefit equation; profile potential risks representing probability and impact of each; and run standard financial metrics.

Brad Post, group marketing manager for Microsoft's business value group, swears REJ doesn't favor Microsoft products. "It's a church and state division. We're really after the truth and beauty of the numbers." To certify REJ as 100 percent neutral, the Microsoft team sends its initial report to Gartner, Giga or KPMG for comment and authentication.

That touch appealed to Angelo Macchia, executive vice president and CIO at Aegis Communications Group. The Irving, Texas, teleservices outsourcer, which has 10 call centers and some 8,000 employees worldwide, was considering a move from Unix/Sun to an all-Microsoft platform. "Gartner did our audit, and they were tough on it," says Macchia. "They pushed back on comparisons that they thought weren't fair, and Microsoft went back and revamped some numbers."

Word of Mouth: REJ is best suited for managing single projects rather than an entire project portfolio. Analysts and users like REJ's business assessment phase, its TCO-like baseline and its inclusion of risk analysis, although that analysis is subjective. If the winds are blowing fair from Redmond, you could get the whole valuation for free, as Aegis did. However, despite the "rapid" in its name, the REJ process can be slow. Also, some organizations won't trust any vendor-sponsored findings.

Time and Money: Between 12 and 20 weeks; $20,000 to $80,000.

Qualitative Methods

These methods, sometimes called heuristic, attempt to round out quantitative measures with subjective and qualitative inputs to assess the value of people and processes.

▶Balanced Scorecard

"You can make it as hard or as soft and fluffy as you want."

Nuts and Bolts: Balanced Scorecard has been around long enough that it's hard to remember how radical the concept was when Robert Kaplan and David Norton first proposed it in a 1992 *Harvard Business Review* article. The two were looking to join traditional finance lag indicators with operational metrics and integrate them into a broader framework that accounted for intangibles like corporate innovation, employee satisfaction or effectiveness of applications. The Scorecard puts those measures into four perspectives—financial, customer satisfaction, internal processes, and growth and learning—then asks managers to evaluate each perspective against the business strategy.

Investors Group, a Winnipeg, Manitoba-based conglomerate of three insurance firms, uses Balanced Scorecard to measure the effectiveness of its newly centralized IS organization. The department inserts metrics and measures into the Scorecard's four perspectives to gauge every aspect of its performance, from the Information Systems Audit and Control Association's IT governance framework, which helps monitor governance effectiveness and process performance, to a series of touchy-feely questions aimed at determining employees' engagement in their jobs.

"You can make it as hard or as soft and fluffy as you want," says Investors Group Senior Vice President and CIO Ron Saull, of the Scorecard. "We make it harder because that's the nature of our executives, that's what they want to see, and because I like to manage with numbers."

Word of Mouth: Because the Balanced Scorecard is primarily a tool for managing strategy, it rarely works without top-level

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executive sponsorship. If companies skip the initial step of mapping out a business strategy with clear cause-and-effect relationships, they can wind up measuring factors that don't link to business performance. Critics who don't care for the Scorecard's softer sliding-scale side charge it's used as a way to justify behavior rather than effect meaningful change. Even proponents acknowledge IT faces a special challenge in correctly mapping its activities to strategic corporate goals.

Time and Money: About three months; as high as $500,000 for a complex, enterprisewide Scorecard.

▶Information Economics (IE)

"What's important is getting the senior people to agree on what's important to the business."

Nuts and Bolts: Information Economics aims to provide a neutral method of evaluating a portfolio of projects and allocating resources where they will be of greatest benefit. The idea is to force IT and business managers to articulate, agree on and rank priorities, and draw more objective conclusions about the strategic business worth of individual projects.

"The value of IT will be improved over time if you invest in high-value projects. The underlying philosophy is to spend your money where it's going to make the most impact," says Tom Bugnitz, president of The Beta Group, the St. Louis consultancy that champions Information Economics.

Both IT and business managers first list 10 decision factors and evaluate each for its relative importance (positive) or risk (negative) to the business. Each line of business has different decision factors that can be added, deleted or changed as priorities change. Next, IT projects are evaluated against those decision factors. The result is a total relative value number for each project in IT's portfolio. With a master list of projects ranked by score, it's simple to determine which should be continued and which should be killed.

Lafarge Canada, a construction materials company in Montreal, had a good track record for IT project starts, but decisions were based more on the power of the business sponsor than on sound strategic principles, says Michel Therrien, director of IT planning and e-business. "Now we can argue around specific definitions. Each of our imperatives is mapped to [our] goal."

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To find a list of links to resources on each of these methodologies, go to www.cio.com/printlinks.

Word of Mouth: IE is a relatively fast way to prioritize spending and align IT projects with business goals. Its risk analysis is fairly detailed, if still subjective. This isn't designed to manage projects, and it won't unless IS and business managers are willing to participate and to possibly revamp current planning models to accommodate the process.

Time and Money: Six to eight weeks; plus or minus $75,000.

▶Portfolio Management

"Transforming the business tends to be a high-risk, high-yield activity."

Nuts and Bolts: Portfolio Management was built around a premise that many other valuation approaches have since borrowed. To contribute to a company's bottom line, organizations must view IT staff and projects not as costs but as assets managed by the same criteria a fund manager would apply to any other investment. That means CIOs should continuously monitor existing investments and evaluate new investments by cost, benefit and risk. Just as stock managers diversify risk in a stock portfolio, so too should IT managers assess risk of technology projects and diversify accordingly.

"You have investments to run the business, grow the business or transform the business," explains Howard Rubin, developer of Portfolio Management and research fellow at the Meta Group in Stamford, Conn. "Run-the-business investments are low risk, low yield. Growth is medium on both sides. And transforming the business tends to be a high-risk, high-yield activity." The level of risk associated with a component should determine the tightness with which it is managed.

Walter Weir, CIO at the University of Nebraska in Lincoln, says adopting ProSight Portfolio software has helped clarify IT priorities—no small task for a department that services 50,000 students on four campuses and has responsibility for universitywide computing, administration, SAP, student information, budgeting, facilities and Internet initiatives. Weir now divides projects into four categories—administration, service, production and enhancement—then tries to emphasize the higher-level strategic activities as much as possible. "The first three I try to cut down on so we can add resources to the enhancement piece," he explains. "It's been a wonderful tool to help me say no when I need to and to help me get extra funding when I need that."

Word of Mouth: This is not to be undertaken lightly. If your organization isn't willing to undergo a change of management processes to accompany its new asset philosophy, Portfolio Management won't be as effective. It can also take time to get the proper mindset ingrained in the organization.

Time and Money: Full implementation in three to six months; cost ranges from about $180,000 for companies in the annual revenue range of $500 million to $2 billion, to $500,000 and up for large companies with revenue at the $50 billion level.

▶IT Scorecard

"Why kill yourself developing financial scorecards when the discussion is just going to get pushed back down to operational issues?"

Nuts and Bolts: Michael Bitterman, a principal with the IT Performance Management Group in Bethel, Conn., spent two years trying to fit IT into the Balanced Scorecard but found it just wouldn't fit to his standards. "The cause-and-effect linkages of the pure Balanced Scorecard don't work," he says. "Some of the [Balanced Scorecard] perspectives don't apply, for example, knowledge and growth. And pure Balanced Scorecard requires a strategy map, but IT organizations are for the most part tactical organizations whether they want to be or not."

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For an antidote, he developed an IT-centric approach that emphasizes moving IT toward a strategic involvement. In place of the Scorecard's four perspectives, Bitterman substitutes business growth, productivity, quality (both internal and external to IT) and decision making. "The idea is to build toward value but start with an internal view for IT to use," says Bitterman.

It's an approach that works for Firemen's Fund Insurance in Novato, Calif. "One thing we faced was a dearth of information. We felt we had to build some credibility with basic measures and show how those fit [into the strategic objectives]," says Jon Cooper, project manager for the IT department.

Word of Mouth: If you like Bitterman's IT-centric, bottom-up philosophy, chances are you'll find stability in the program's highly specific, many-layered approach.

Time and Money: Between six and eight weeks; consultant's fees run from $75,000 to $250,000; software can be as little as $20,000 or as much as $150,000.

Probabilistic Methods

These methods use statistical and mathematical models to calibrate risk within a range of probabilities.

▶Real Options Valuation (ROV)

"What kind of investment do we make in technology to create flexibility?"

Nuts and Bolts: Taking its cue from the Nobel-prize-winning Black-Scholes model for valuing options, ROV aims to put a quantifiable value on flexibility. The technique was applied to leasing, mergers and acquisitions, and manufacturing. Around 1990, "it became a very natural question to say, What kind of investment do we make in technology to create that kind of flexibility?" says John Henderson, the Richard C. Shipley professor of management at Boston University and chairman of that department. Thus began the movement to value infrastructure and other ground-floor technologies, because nearly all other technical innovations are built on top of those base decisions.

Word of Mouth: Academic and arcane, but valuable. Works best as a stand-in for standard capital-budgeting processes in markets and economies where uncertainty is high and the need to stay flexible is at a premium. Most companies use ROV as a building block alongside more traditional financial and productivity measures.

Time and Money: Not applicable, as ROV is most often used as one measure inside a larger valuation plan.

A ***CIO Focus*** guide, **IT Value: Measurement Tools and Techniques That Work**, is available for purchase at **www.theciostore.com**.

▶Applied Information Economics (AIE)

"If we can compute probability on a satellite that's never flown before, we can compute project success in IT."

Nuts and Bolts: Here's a method for people who mistrust TEI's sliding-scale "guesstimation" of risk analysis, feel uncomfortable with TCO's single-point outcomes, and wouldn't use a Balanced Scorecard to take a nap on. If you're looking for quantifiable, statistically valid risk-return analysis that would make an insurance executive drool, AIE should work.

AIE developer Douglas Hubbard combines options theory, modern portfolio theory, traditional accounting measures like NPV, ROI and IRR, and a raft of actuarial statistics to quantify uncertain outcomes and generate a bell curve of expected results that objectively incorporates both risk and return. "If we can compute probability on a satellite that's never flown before, we can compute project success in IT," Hubbard insists. "IT does have a repeatable history, and if you're not willing to include that in your analysis, you may as well just flip a coin."

Word of Mouth: This is the most numbers-heavy methodology covered here. Like the IT Scorecard, AIE is essentially a one-man show. Critics charge its myriad calculations eventually hit the law of diminishing returns. For costly and career-making projects, it's a thorough and statistically valid way to analyze risk.

Time and Money: Plus or minus eight weeks; costs are typically 1 percent to 2 percent of overall project budget.

Which One Is for You?

We've zeroed in on each plan as best we can, but it's simply not possible to make a statement like, Portfolio Management is best suited for Web-based pizza delivery businesses. Choosing a valuation plan has at least as much to do with the way you, your department and your organization operate as it does with the individual merits of each approach, practitioners say.

Take a good look at how other functions in your organization value their investments. Douglas Hubbard is one of several analysts who express frustration at IT's occasional lack of perspective. "You don't have to dummy your numbers down," Hubbard insists. "It's time for IT to catch up with the business side." CIO

Which IT valuation methodology have you chosen for your organization? Let Features Editor Lafe Low know at *llow@cio.com*. Tracy Mayor is a regular contributor to *CIO*. Contact her at *tmayor@attbi.com*.

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How can the CIO and CFO quit arguing and come together? Who better to tell us than leaders who have lived both roles simultaneously.

BY DEREK SLATER

GET IN TOUCH WITH YOUR INNER cfo

For the CIO, chief financial officers have historically been adversaries at worst, obstacles at best. This magazine has done more than a few articles on how to relate to the CFO (see a list of those articles at *www.cio.com/printlinks*). Although fewer CIOs are reporting to CFOs these days, the moribund economy and the tightening of the expense screws have once more pitted the CFO against the CIO. Again we leap to the rescue with advice on how to work well with CFOs. But this time the wisdom comes not from one side or the other, but from people who have simultaneously occupied both roles and seen the conflicts and solutions through one pair of eyes. David Goltz and Vincent Laino both fill a dual CIO/CFO role at their respective company—Bethesda, Md.-based Destiny Health insurance company (where Goltz was interim CIO through June 2002) and West Chester, Pa.-based environmental consulting service Roy F. Weston. Here they offer *CIO* readers their unique perspective.

ILLUSTRATION BY LEIGH WELLS

CIO: Where do CIOs and CFOs get disconnected? What are the typical points of disagreement?

Goltz: It's pretty straightforward. CFOs always look at [a proposal] and say, What's my return on investment? How can I make this pay for me? CIOs are typically saying, If I spend this much more on technology, I can deliver this wonderful functionality or product or service, though nobody can say, Here's how much time and money it's going to save. So to the CFO, it looks like technology for technology's sake, without any real gain for the company. And the reality is, in some cases it is technology for its own sake. But on the other hand, technology is a fact of business life; you have to have it in order to provide a certain level of service or access to your constituents and customers. Some of it is just overhead you have to have.

david goltz

CFO and Former Interim CIO
Destiny Health
Headquarters: Bethesda, Md.
Business: Health-care insurance
Employees: 100
Background: Undergraduate degree in accounting; master's in international business and finance. Spent 12 years in manufacturing but has worked in health care since 1980. Career path has been in the financial area; first served a dual CIO/CFO role several years ago at a rapidly growing HMO, adding CIO responsibilities because he "complained the loudest." Most recent dual function stint ended this summer, when Destiny Health hired its first permanent CIO.

PHOTO BY JEFF SCIORTINO

What's the most effective way for the CIO to communicate with the CFO? Particularly when it comes to getting a budget or project approved.

Goltz: The most obvious approach is to say, Look, we need to spend money on this project; this is how it will support our business objectives. Some IT projects have that immediate impact. But the next level of difficulty—and this is where you're going to have to educate the CFO—is when you have to spend money to stay in stable technology. If you buy a PC today, it's shipped with Windows XP; it's not NT anymore. So at some point we're going to have to move all of our PCs to XP in order to keep a stable platform. The question is, When do you do it? What's it cost—not just in terms of the cost of the software, but also what we're spending in terms of support and so on? Then, the best approach is to come into the discussion with your CFO armed with lots of information: If we upgrade now, here's what it will cost, and here are the savings we'll have for supporting a single platform instead of multiple versions. But here are the risks: XP is not the most common operating system out there. So you're presenting it as a business case, even though it's not always about ROI specifically.

Laino: You must be able to have the conversation around value—not numbers, but value. For example, we worked on a portal project last year, allowing employees to customize our website for their individual use. You have to do a prototype, and sit down with the people in senior functions and say, This is what I think is going to help you do your job every day. Am I close? And have that kind of open conversation about the benefits of what you're creating. If you get their buy-in—Yes, that would really help me—then you can drive down to the math, figuring out how much time it's going to save every day. Then it's just a question of whether we have the money to get the project done this year.

Because of the economy, one could assume that CIOs and CFOs alike are focused on ROI. Yet there's also an IT spending backlash due to years of heavy investment and disappointing return. So are CIOs and CFOs on the same page, or are they still locking horns?

Goltz: The successful companies in the long term are going to be the ones that say, I'll live with not quite the profits I might have had, and I'll invest in technology, product development and things that will carry us into the future. Some CFOs understand that. But if they don't, then the CIOs should be locking horns with them right now.

Laino: That makes sense, and I'll give you an example. We're working on a learning management system. Right now I probably can't fund that project. I can fund a piece of it but not a lot. We're looking at what it's going to cost us to: A. put the infrastructure together, meaning the learning system itself; and B. fill in the infrastructure with content. My guess is that this will be a three-year project, and we may do 10 to 20 percent of it this year, depending on how well we do as a company. Those conversations are happening now on a rolling quarterly basis, so we can anticipate the need for cash flow and forecast when we want to spend this money.

So today there's still debate between CIOs and CFOs. What is the CFO really looking for? How does the CIO make the CFO his ally?

Goltz: CFOs typically look at business plans and the intentions of the business, and then they spend their time building a budget and capital allocation plans behind that plan: Here's how we're going to grow our business, here are the sales targets and expectations. They do a functional analysis and ask each department or area, including systems, What is it you need in order to be able to support this plan? To get the CFO on your side, the best thing you can do is understand that business plan and the dynamics and the cost structure of whatever your particular function is. Know what it's going to cost to build each piece, and always have options. Don't paint yourself into a corner and say, This is the only way to do something—unless of course that's truly the case. To have the CFO in your corner, you want to present a recommendation but also give options. The recommendation part is important. The worst thing you can do is go to the CFO with options but no recommendation, because then the choice is always going to be whichever option is cheapest. The more information you can provide them so they can make an informed decision and the more you support the business strategy, the more they'll be your ally. That's good advice no matter what your position is.

Laino: There are a lot of technical decisions you have to make about the infrastructure. And those things are very hard to present because people don't see direct value. I'm upgrading to Windows 2000 because I need to keep a stable platform to provide all these services, and the natural response is, But the services have been stable for two years; I don't see why we have to spend money on it. However, I've gotten to the point where I have an annual range of dollars to do infrastructure work, and it's not questioned. I rolled it up into one big infrastructure project, the network, the data storage, and said, "Here's our infrastructure upgrade project for the next year, the sum total is $700,000," and I don't even do an ROI anymore. That's because of my relationship with the senior leadership team. If the cost is within your decision-making authority, you can go ahead and do it.

Goltz: This is where the typical CIO fails: They don't [establish that credibility by] looking at technology in the scheme of how the company wants to position itself. The best CIOs understand that and say, I don't need the latest version of Oracle. I don't need to be out there pushing that. We're a health insurance company with a leading-edge product, but I don't need bleeding-edge technology to deliver it.

vincent laino

CIO/CFO
Roy F. Weston
Headquarters: West Chester, Pa.
Business: Environmental consulting services
Employees: 1,800
Background: Dual degree in accounting and computer management systems from Drexel University and an MBA in financial management from Drexel. College co-op work at Coopers & Lybrand convinced Laino he didn't want to be an auditor. Joined DuPont Chemicals IT group, working on accounting systems, EDP audits and sales-force automation. Hired 13 years ago by Weston as financial systems manager to help implement new financial systems. Became CIO seven years ago and took over CFO duties one year ago.

What else do CIOs do that drives CFOs nuts?

Laino: Whether you're in the CIO role or any significant leadership role, you can't do the job in a vacuum. If you make decisions about things that impact many people without getting input, you're going to fail. This is something that frustrates me even among my own IT staff. We've got maybe a dozen corporate reengineering initiatives right now, and we haven't been looking at the impact of the sum of all this on the folks who have to go out and earn money every day—those who have to change their processes or workflows. So we're stepping back to make sure we're not asking the same person to do 15 different things at once.

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ASK THE SOURCE: Talk to Vincent Laino about what's in the CFO's head. Go to the **WEB CONNECTIONS** box at www.cio.com. Read more about CIO/CFO relations at www.cio.com/printlinks.

Goltz: There are CIOs who think they're building software to save the world. They get all bound up in rational unified theory, system development life cycles, release management. All those things are great if you're a software development business, but for me, I don't care. The real question is, How does that move our business forward? So CIOs who can't move beyond that are difficult to deal with.

Then you get CIOs who just want to say they've got the latest and greatest technology. Guys come up with solutions that are killing a fly with a stick of dynamite. I understand that people in systems push hard because they want to be on the bleeding edge, to do the latest and greatest thing to advance their careers. But that doesn't help the business. It's difficult to balance those needs, but CIOs have to do it.

Well, since you're filling both roles, presumably you can avoid that conflict altogether. Do you cut your CIO-self any slack when it comes to cost-justification and budgeting?

Goltz: That's absolutely the case. Systems people come to me on a day-to-day basis for stuff they know they need, and if the cost is reasonable, I just tell them, "Go." If I were solely the CIO, I probably couldn't do that. As CIO and CFO I can, up to a certain spending level. And they like that. But getting back to the issue of making the CFO your ally, your ability to commit funds and resources to projects is far greater if you've built the credibility. Once you've established that credibility, the CFO isn't going to get in your face. They're just going to ask, How are we doing against what we said we would do?

Laino: In a sense I cut some slack in that I don't have to do an ROI on every single project. But understand that the areas I'm responsible for account for something like $10 million in expenses, and I have to stand up for that in front of 13 other executives. Other people in the group stand up and say things like, We're delivering $4 million of profit margin to the company this year, and I'm standing up saying, I'm spending $10 million of that margin. I'm accountable for that, so I have to be sure that I'm delivering the right, high-quality services. If I do my homework and build my budget numbers through conversations with the guys who report to me, it's not a tough role.

How do you synchronize with your CFO? Tell *CIO* Deputy Editor Richard Pastore at *pastore@cio.com*.

A step-by-step approach that will ensure that your expensive KM system actually gets used

BY SIMONE KAPLAN

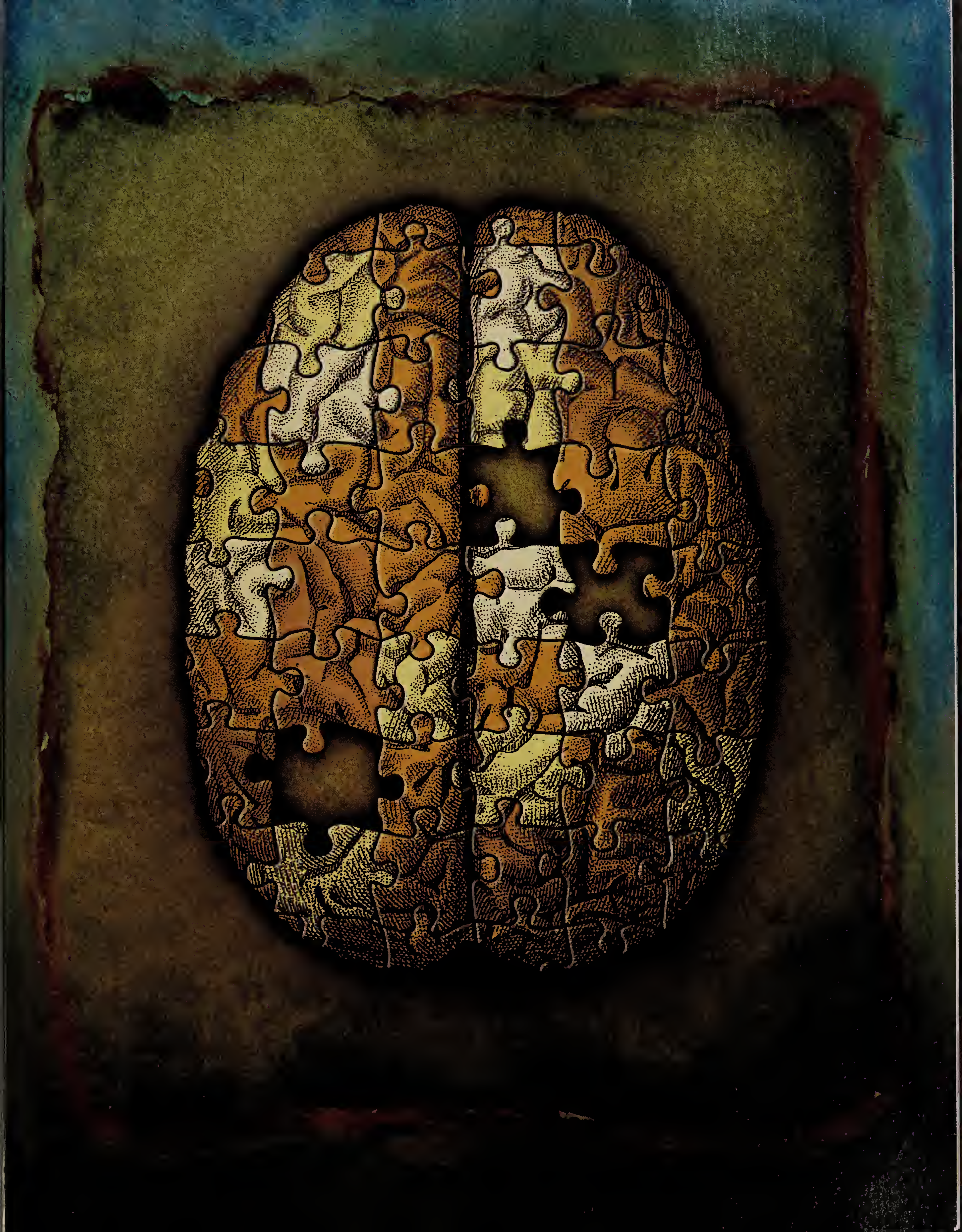
The Right Way

Reader ROI

- Learn how to judge whether your organization is ready for KM
- Learn what you need to evaluate before you jump into KM
- Understand why technology is only a small part of the KM equation

When Tom Rossi, director of the Innovation Lab at the Naval War College in Newport, R.I., began a knowledge management initiative in 1999, he thought he knew everything. Rossi and his team were charged with creating a futuristic environment for computerized war games. The games, held annually for more than 20 years, have about 500 senior military and civilian players who need to share real-time information about troop deployments, battle readiness and the battlefield environment. Prior to Rossi's KM project, the gamer commanders had to gather information via phone calls, memos, e-mails and game books—none of which encouraged the kind of instantaneous decision-making necessary in combat situations.

ILLUSTRATION BY SHARON SWANSON



Rossi and his team put together a KM system that integrated a collaborative software suite, a naval war games software tool and Microsoft Exchange's Conferencing Server for Internet video and chat capabilities. In the year between games, Rossi worked with engineers and a metrics team to fine-tune the system. They tailored the command and control databases so that various commanders had access to the same information; as one group of officers plotted troop positions and battle tactics, other participants lower down the chain of command could see the plans as they formed and anticipate what their own tasks would be.

> **"Usually people begin a KM project by focusing on the technology needs. But the key is people and process."**
>
> –Shir Nir, managing partner of Knowledge Transformation Partners

In theory, Rossi's project sounded great. But by 2001, the technology bogged down. "We had gadgets and tools, but when we brought the gamers together, it became clear that we'd given them too much IT," Rossi says. "By the time we brought them up to speed on the new tools, the game was well underway and they got frustrated fast."

As a result, the 2002 war games were canceled.

Rossi's misstep is a common one. While KM is a sound field with real benefits such as reduced training time for new employees, improved decision making and better operational efficiency, it's difficult to get it right. "The biggest misconception that IT leaders make is that knowledge management is about technology," says Shir Nir, managing partner at Knowledge Transformation Partners (KTP), a KM consultancy based in New York City. "Usually people begin a KM project by focusing on the technology needs, whether they want a database or a portal. But the key is people and process."

It's natural for CIOs to focus on technology, and many vendors are happy to oblige them by marketing so-called off-the-shelf KM systems. Yet as Rossi and countless others have learned, there's no cookie-cutter approach to adopting knowledge management. Every organization and company has its own definition of knowledge and how it should be gathered, categorized and made available to employees. What works for one company won't work for another because organizational knowledge is so subjective.

The one-size-fits-all mentality, coupled with the tendency to focus on technology rather than people and process, has obscured the real benefits that KM can bring, according to Nir. It doesn't help that knowledge management means different things—and often involves different kinds of technologies—at different organizations.

In terms of technology, KM often covers some of the same territory as CRM and sales-force automation, each of which gather information in an effort to increase efficiency and quality of service. Because KM usually requires changes in work patterns, there is also some crossover with change management and HR. The sticking point for many KM initiatives: Knowledge deemed valuable to the organization is often tied to individual experiences, attitudes and behaviors. For example, what makes one salesman better than another may be his individual contact lists. But as most salespeople are loathe to share any of their inside customer information, an organization must provide motivation for them to do so, such as offering them compensation or encouraging them to close sales collaboratively rather than individually. That is why paying attention to people and process is so important.

Defined broadly, knowledge management is the process through which organizations extract value from their intellectual assets. To get KM initiatives off to a good start, executives must evaluate whether their organization has a strategic need for knowledge management in the first place. Then it's necessary to decide whether the current process of dealing with corporate knowledge is effective and if the culture is ready for procedural changes. Once executives have resolved those issues, the CIO can evaluate the existing technology infrastructure to determine whether it's adequate for KM or whether new systems are needed.

step 1

Ask Why

The first step toward a successful KM project is to look closely at your organization and define the strategic business need. If KM isn't tied to a business goal, the organization could end up with an expensive system that takes up server space but has no real purpose or ROI. Unfortunately, this first step is one many organizations fail to take. In a recent study by The Conference Board, 82 percent of participating companies indicated they were involved in a KM project, but only 15 percent of them said they had specific, stated objectives for the project.

Often companies link a need for KM with an event. During mergers, for example, information about intellectual assets, processes and potential collaboration should be collected for use in the new organization. Some people also view layoffs as a good time to look at KM. But Gene Wright, director of the manufacturing practice at Born, a Minneapolis-based technology consultancy, says companies shouldn't wait for a major shake-up. "When you look up and notice a redundant process or an example of repeated inefficiency where you realize you're spending all your time searching for information online instead of communicating with your clients or customers, that's a good time to think about KM," he says. "It's when you reach the point of pain, when you realize you can do things better."

For Brad Sidwell, CIO of Ice Miller, a law firm in Indianapolis, the need for KM became painfully apparent during a meeting with a prospective client that wanted to know whether the firm had worked with any of its competitors and, if so, what kind of work was done. "We discovered that we had no clue," Sidwell says.

To get started on a KM project, Sidwell defined the scope of the data he wanted to collect and organize—information on past and current clients, what work had been done for them, and their legal preferences. Each lawyer's knowledge and expertise had to be gathered and stored for others to access. Sidwell chose a product from Interface Software called InterAction to help set up a database for collecting client information. From a technology standpoint, the project is a success, Sidwell says, though he admits that the firm still struggles with motivating lawyers to contribute personal knowledge about old clients. (They are more willing to contribute information about new clients.)

By taking a proactive approach to KM, Sidwell's firm is in the minority, says Skip Boettger, chief knowledge architect at software company PTC's global services division, which is based in Needham, Mass. Usually it takes some kind of disaster to jolt a company into understanding the business benefits of KM. "Whether it's low profit margins or overspending, it takes a lot to get a CEO's attention," Boettger says. "But it doesn't take much for a business to realize it can improve the whole process of gathering and organizing knowledge. The key is that you have to focus on the business need, whether it's a problem you want to solve or a process you want to improve upon."

Once companies determine the business need, they can get a handle on the nature and scope of the intellectual assets they want to manage. Then they can determine how KM will affect the work routines of employees, Boettger says, which is an essential step to moving forward.

Getting Ready for KM

Mark Youman, a principal at American Management Systems, a government and private systems integrator in Fairfax, Va., is an expert on project and knowledge management as well as IT strategy. We asked Youman what steps a CIO should take to help prepare his company for a major knowledge management initiative.

BEFORE TACKLING A KM INITIATIVE, Youman says, CIOs should take a close look at the project's business objectives. Some common objectives include:

- Improve returns on customer information. Consolidate and leverage information about customers and potential customers to tailor offerings, improve customer service and increase revenue.
- Improve efficiency and effectiveness. Connect similar functions across geography to reduce redundancy and share practices.
- Enable a mobile workforce. Connect mobile workers with information and with each other to create a virtual workplace that, like the physical one, derives its value primarily from the capabilities of its staff working together—not from access to the right data.
- Integrate with business partners. Share knowledge and collaborate outside the firewall to enable efficient business networks or intergovernmental coordination.

One of the most common pitfalls of KM is when project leaders lose sight of objectives like those. These kinds of mistakes can take many forms. When CIOs approach KM as an academic initiative instead of a business initiative, they often try to teach executives and business leaders about the theories and language of KM. According to Youman, this can result in fuzzy explanations that fly over everyone's head, such as: "We want to forge communities of practice that use asynchronous collaboration to turn tacit knowledge into an explicit corporate asset." Project leaders should translate the concepts of KM into the language and practices of their organization.

Youman advises CIOs to think about the following questions:

- **Are there pressing needs for better knowledge sharing and use in areas that are important to your organization?**
- **Can you find a group of people willing to explore new ways of working to address pressing knowledge needs?**
- **Can this group or another source provide limited seed funding to pilot new tools that enable new ways of working?**
- **Can you map out a pilot model that will scale to the entire organization?**

IT and organizational leaders often make the mistake of trying to achieve cross-organizational consensus before starting the project, a surefire way to guarantee everything gets pushed out a few months. Sometimes they try to change the corporate culture in advance of the project, rather than setting the business objectives and then judging how and if the culture should change. Then there's the inevitable KM-for-KM's-sake approach, which, Youman says, has nothing to do with business objectives. During KM initiatives, project leaders frequently forget to set benchmarks along the way because they forget that KM is a process, not a project with a finite end. *–S.K.*

step 2

Show and Tell

How executives introduce a KM project to their company—and how those executives help the employees adjust to changes in their work routine—can make or break the project. "It's not a system solution, it's a people solution," says KTP's Nir. "It's about sharing as a whole organization, not just about the knowledge itself."

In spring 2000, when Paul McKeon, a former partner and chief e-business officer at Ketchum, a New York City-based public relations company, planned the rollout of his company's new knowledge management system, he knew changing the staff's work routine and culture to incorporate the sharing of relevant knowledge would be a challenge.

At the time, Ketchum was experiencing a high rate of turnover. McKeon and other executives realized that incalculable amounts of expertise and knowledge were walking out the door every time an employee moved on. "In a professional services business, all your investment is in your people," says McKeon (now president of Chamber Edit, a company that provides portal software to chambers of commerce).

Ketchum's system has three parts, which all require the participation of every employee: A document management system catalogs documents that previously existed on servers and hard drives at the company's 29 offices; an expertise database contains an employee directory that lists staff biographies and photographs, areas of expertise, and client experience; and the client database lists past and present clients, and the work the firm has done for them.

> "If KM is just handed over to IT, it ensures failure."
>
> –Gene Wright, director of the manufacturing practice at Born

Instead of gradually introducing the staff to the process of contributing information, McKeon worked with Ketchum's workplace practices group to create a campaign similar to what the firm does to gear up for a new client. During what Ketchum dubbed Reboot Week, McKeon taught the staff how to use the new system through webcasts and conference calls. Employees spent the week going through files, documents and e-mails, and entering all relevant information into the document database, as well as creating and updating their personal pages in the employee directory.

Reboot Week helped staff members overcome their hesitancy about sharing client information. To reinforce that message, McKeon made sharing mandatory; each employee's contribution to the KM system has become part of their performance review.

step 3

Pick the Right Tool for the Job

One of the biggest mistakes a company or CIO makes at the outset of a KM initiative is to get carried away with the technology. "If KM is just handed over to IT, it ensures failure. The CIO's role is to make sure the technology end of a KM initiative does what the company needs it to," according to Born's Wright.

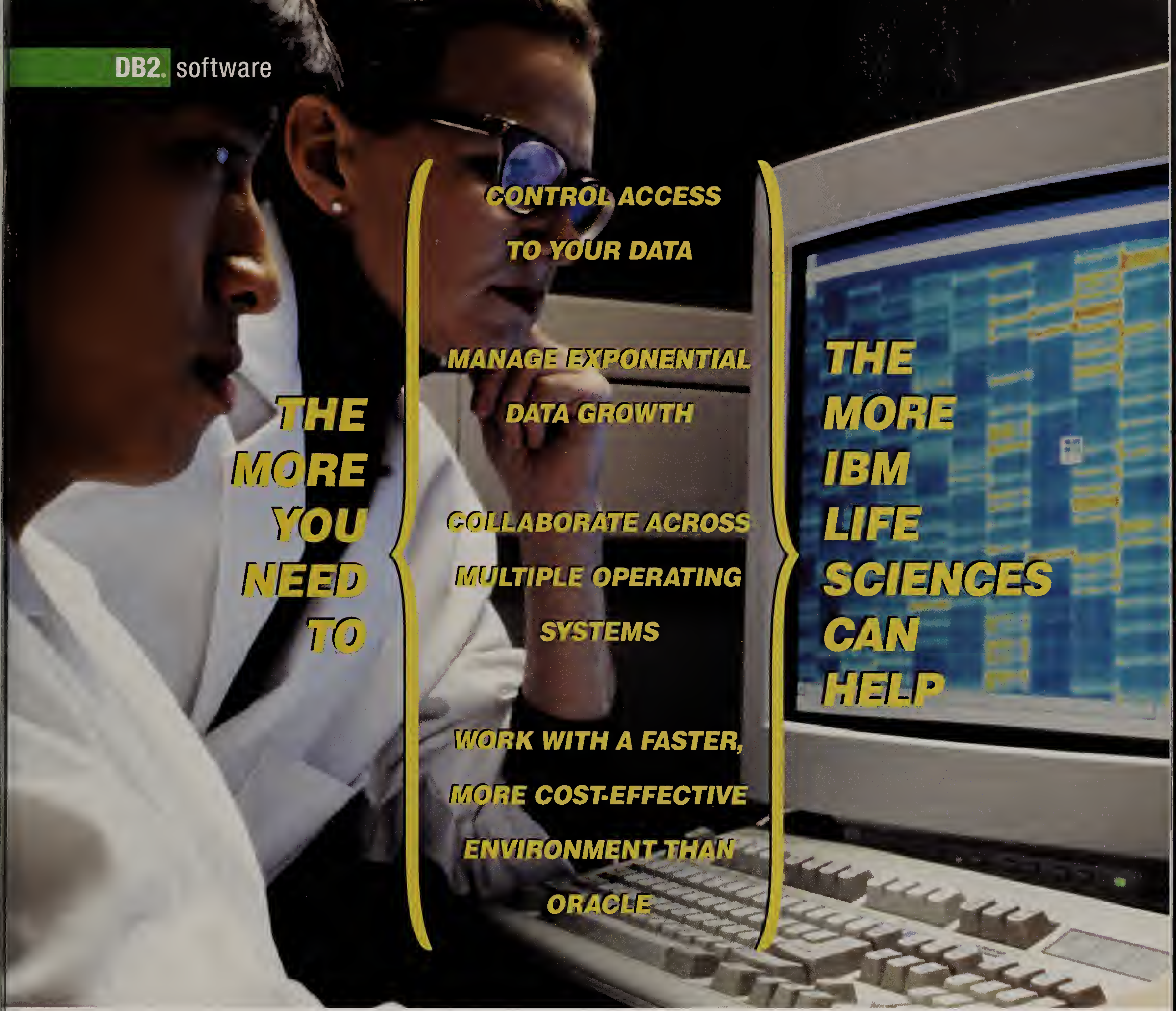
Before the Federal Highway Administration (FHWA) in Washington, D.C., went forward with plans for a knowledge management system, officials took a look at their technology and realized something new was needed. The FHWA ran primarily on an Oracle platform, which worked well for database management but didn't deal well with the kind of unstructured, research-based data targeted for organization, says Mike Burk, the FHWA's chief knowledge officer.

The FHWA's employees worked primarily within Novell's GroupWise system and did most of their business via e-mail. Burk knew that employees wouldn't constantly monitor the site for new information updates, but they did check their e-mail regularly. He worked with the FHWA's CIO to link the existing Oracle-based system with the agency's website; they set up automatic e-mail updates that notified employees whenever new information had been placed in the website's knowledge base.

Burk's approach is uncommon, says Mark Horwitch, head of Bain & Co.'s knowledge management practice in Chicago. "The danger with KM is that most companies jump in without thinking through major questions," Horwitch says. "Look at the processes and information requirements that you need to succeed. Is the solution really a complex IT tool, or are you just underusing tools you already have? It's a lot easier and cheaper if you look from the top down."

In addition to a top-down view, organizations need to select KM tools that will complement how employees work rather than distract them. During the games at the Naval War College, participants defaulted to tools they were comfortable with such as Microsoft NetMeeting and Instant Messenger instead of using the collaborative KM tools Rossi implemented. The Naval War College skipped the 2002 war games in order to put more analytical rigor into its KM program. "We are clearing the slate and looking at tools we know we need instead of tools we'd like to use," Rossi says.

To make sure next year's participants don't get overwhelmed by the technology, Rossi plans to get the participant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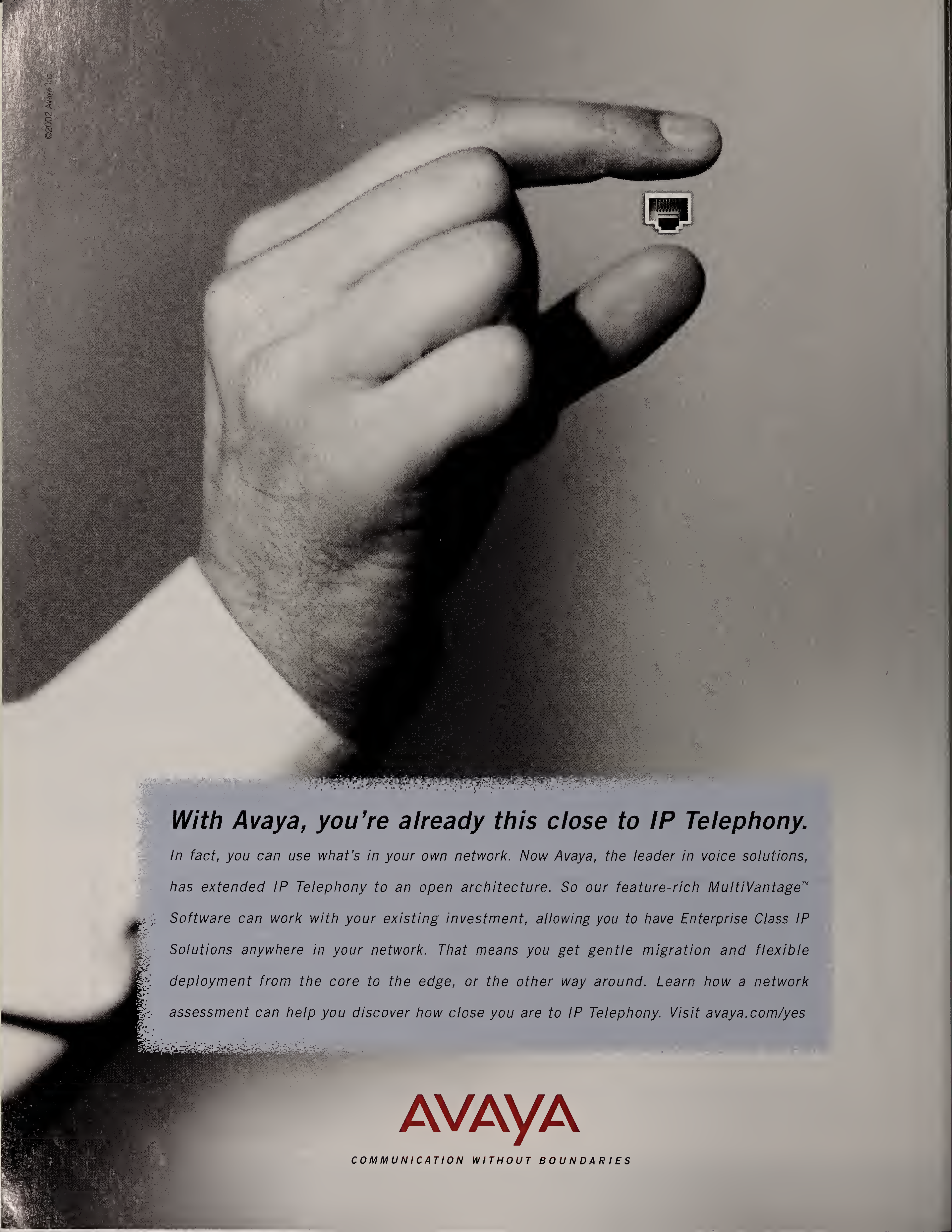

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list early and involve all the players in building the game program. When they come to play next summer, he hopes everyone will be up to speed.

According to Born's Wright, a key role for CIOs is to make sure every employee gets hands-on training with KM systems. If no one knows how to use new tools, even the best KM project will fall flat on its face, he says. CIOs can also integrate change management efforts into a KM project by recruiting thought leaders within each department. The thought leaders can ferret out frustrations, resistance and department-specific needs for a KM system, which will help IT make the system as user-friendly as possible.

PEER RESOURCES

WHAT YOUR COLLEAGUES NEED TO KNOW ABOUT COLLABORATION

E-mail your fellow execs the article **CULTURE OF COLLABORATION** from our online sister publication Darwinmag.com to help them help your KM cause. To find the story, go to www.darwinmag.com or to www.cio.com/printlinks.

At California Casualty Management, a San Mateo-based insurance company, CIO Vasu Kadambi is looking into starting the IT rollout of a KM portal that will deliver sales, underwriting and claims information quickly to customer service representatives. Although he'll be immersed in the technology rollout, Kadambi is not in charge of the overall KM project. In his view, the CIO's job in KM is to ensure that the technology doesn't derail employees so that effective information sharing can take place. "My role is to help people get the information they need," he says. "Technology just helps the process of gathering information."

Those who have successfully tackled KM projects have taken a systematic approach. "Knowledge management is not a walk in the park," Nir says. "It can be overwhelming, so make sure you look at it one step at a time." That's not to say you have to be a business genius in order for your KM project to succeed. To ensure the best odds, take a big-picture view by first defining KM in terms of a business objective. Once that challenge is met, your company will be in a much better position to determine which of its intellectual assets are worth organizing, managing and sharing. Take a look at the people and processes that will be affected by KM and address any relevant issues accordingly. And then it's up to the CIO to evaluate current technology and recommend and implement new systems as needed.

While there's no way to guarantee the ultimate success of any knowledge management project, organizations will have a better chance of maximizing their investment if they take projects one step at a time. CIO

If you have suggestions for successfully implementing KM projects, share them with Staff Writer Simone Kaplan at *skaplan@cio.com*.

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Edited by Christopher Lindquist. Send your thoughts and ideas for future columns to clindquist@cio.com.

Putting Content in Context

ILLUSTRATION BY MARLENA ZUBER

Digital asset management is moving into the mainstream as companies look for time and dollar savings by centralizing control of their precious multimedia assets

BY SARI KALIN

COCA-COLA IS USING it to bottle up 116 years of brand history, including its hippie-era ad classic, "I'd like to buy the world a Coke."

DaimlerChrysler is using it as a virtual parking lot for vehicle images.

The National Football League is using it to hand off game photos and head shots of some 3,000 players and coaches.

Those companies are among a growing number of organizations deploying digital asset management systems—software that stores and organizes images, audio, video and other digital objects, making them easier to find, transform and reuse. Digital asset management (DAM) found an early niche in the media, entertainment and advertising industries, with pioneers such as CNN and Discovery Communications using it to get a high-tech handle on their vast video libraries. But the market is poised for rapid growth during the coming years, analysts say, as mainstream companies realize that they too are awash in rich and varied forms of content—

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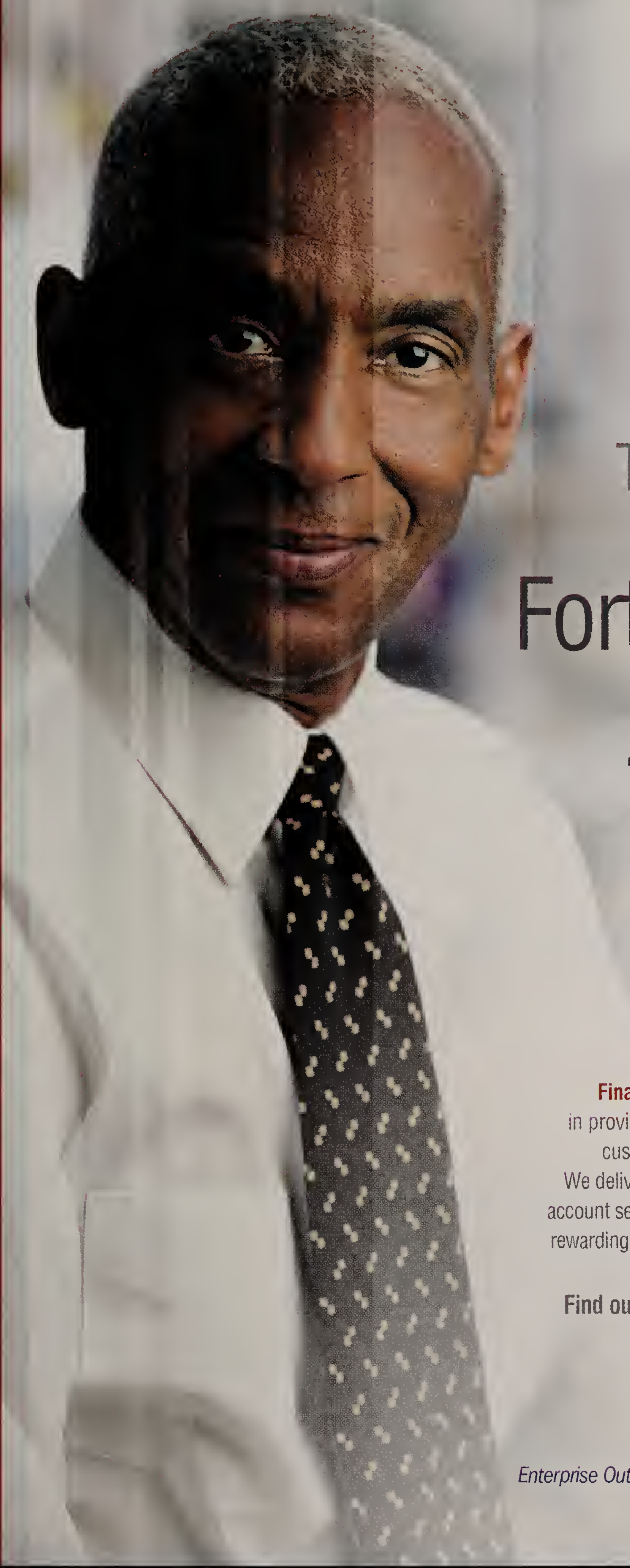

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PowerPoint presentations, product photographs, training videos—and that they desperately need a centralized, speedy way for employees and partners to locate such content and manipulate it.

"Most CIOs find themselves in the unhappy circumstance of having all of these islands of stuff that are not federated in any way," says Michael Moon, president and CEO of Gistics, a Larkspur, Calif.-based research company. "So they can't say, How many reusable objects do I have in my enterprise?"

Not being able to ask or answer that question can prove costly. DaimlerChrysler, for example, works with multiple ad agencies in the United States. Car images and other marketing-related media have typically been stored in separate databases, some at agencies, some in-house, says Bill Whedon, director of e-commerce and dealership technologies in Auburn Hills, Mich. "We would end up with redundant [photo] shoots, but oftentimes we didn't realize [it]," Whedon says. And each photo shoot could cost tens if not hundreds of thousands of dollars.

Now, with DAM software from Artesia, Whedon says, the automaker will be able to centrally store and manage data, graphics and images used in the company's websites, electronic kiosks and traditional print-marketing pieces; it'll be able to store video for use in a variety of mediums. Whedon hopes that the DAM system, scheduled to roll out by July, will help eliminate wasteful duplication and encourage designers to transform and reuse existing materials. Say a promotional piece needs to show a yellow 2002 Jeep Wrangler Sport in a rugged landscape, and the DAM system already holds an image of a white Wrangler Sport thundering across the Mojave. "It's much easier to repurpose the image—to change the color—rather than going out and reshooting it because you need the car in a different color," Whedon says.

The DAM Difference

General-purpose relational databases have long been able to store and retrieve unstructured information as "blobs," or binary large objects. Yet there's a difference between simply storing and retrieving digital riches, and doing something useful with them. Companies want to be able to attach descriptive information, or metadata, to their images, audio and video to make them easier to find. They want to keep track of versions and set up workflows, control access and manage digital rights. They also want to be able to convert or "transcode" their media into different formats, depending on its use.

There's a difference between simply storing and retrieving digital riches, and doing something useful with them.

Five years ago, Coca-Cola couldn't find any suitable commercially available software to digitize and organize images from its archives. So Coke's IS department built an image repository that had a strong search capability and made it available on the company's intranet, with reasonable success, says Phil Mooney, director of Coke's archives department in Atlanta. But two years ago, Coke began looking at setting up parallel systems for archiving textual information (press releases, executive memos, articles written about the company) and moving images (TV commercials, company-sponsored films, videos of executive presentations). "We were creating these silos of information," Mooney says. "We said, We've got to find a digital asset management system that will be a one-stop shopping place."

Coke found what it needed from another global giant, IBM, in a product called Content Manager (formerly called Digital Library). Mooney says he was drawn to IBM by more than just system features and scalability. "We were convinced that IBM was going to be here in five years, whereas a lot of those other folks, we just didn't know about," he notes.

New DAM vendors will no doubt enter the market, says Framingham, Mass.-based IDC (a sister company to *CIO*'s publisher), even as consolidation continues. IDC forecasts that spending on software for "rich media asset management" will grow from $117 million in 2000 to $1.8 billion in 2005. Adding to the confusion: Vendors that offer Web content management, enterprise content management, document management and brand resource management are adding features that overlap with those offered by DAM vendors.

But for now, a dearth of off-the-shelf systems remains, and DAM prices are all over

Disappearing DAM?

Digital asset management (DAM) products may be a hot topic now, but a January report by Stamford, Conn.-based Meta Group predicts that by 2004 or 2005, such tools will likely evolve into nothing more than a set of features inside more complete enterprise content management tools.

That said, Meta doesn't think customers should ditch DAM systems. Instead, the report, "An Update on Enterprise Digital Asset Management Systems," indicates that companies should still use DAM systems to manage their unstructured multimedia content, resting safe in the knowledge that existing tools from established players will likely be acquired by more inclusive content management players. That may provide some security despite ongoing consolidation in the marketspace.

–Christopher Lindquist

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the map. Canto, for example, sells a single-user version of Cumulus, its DAM product, aimed at individual photographers and graphic designers, for $99.95, but it also offers enterprise packages that start at $35,000 for 20 licenses. Artesia says most of its deployments start at $100,000. Meanwhile, IBM DAM projects call for software and services that typically range from $250,000 to $5 million. "It's a highly fractured market," says Joshua Duhl, a contributing analyst at IDC.

Digitizing the World

For some companies, a digital asset management effort begins with analog assets that need to be converted into digital form: movies, photographic negatives, printed reports, audio tapes. The conversion task can be time-consuming and expensive, forcing most companies to be selective about what they digitize. Coca-Cola has more than a million items in its archives, for instance. Mooney first moved to digitize those items that were likely to get the most use, such as Coke's first-ever newspaper ad that ran in 1886, its Norman Rockwell calendar art from the 1930s or that 1971 TV commercial that showed all those hippies singing on a hill.

Analysts see new markets for DAM in everything from corporate training to public safety.

Once a company picks what to put online, it has to decide how to describe its assets. "The hardest part is finding out what you have, identifying it and describing it properly in the system so it can be found later," says Andy Shenkler, director of the digital services group for EMI Recorded Music in Woodland Hills, Calif., which is using DAM software from Bulldog (a company acquired late last year by Documentum). The recording giant has populated a DAM system with its entire current audio catalog—some 10,000 recordings, ranging from *Beethoven's 5th* to the *Beatles' Abbey Road*. Shenkler's group can enter basic meta-data elements—album name, artist, release date. But "there's no way for my group to know who was the fourth artist on a particular track," Shenkler says; that information has to come from the individual record label overseers. "Then there's the rights info—it changes track by track, and that has to be cleared by business affairs and legal."

Another major decision companies must make is who will access the digital assets and how. Given the current economic climate, some companies decide to start out with a fairly small, department-level project. Other companies vary DAM access based on their comfort with the user audience. The NFL, for example, makes game photographs and player head shots available to registered press members via a website, maintained by WebWare. WebWare is also building a B2B system for NFL licensees, who will be able to search for and download high-resolution images. The software generates a usage report, and then the NFL sends out a usage contract and a bill. Another NFL site being built for consumers, however, won't allow access to high-resolution photos; consumers will be able to search for images and then order photographic prints by mail.

IT resource constraints can also shape DAM deployment decisions. At Coca-

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–Christopher Lindquist

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Cola, Mooney wanted to offer high-resolution images and video for downloading, but the IS department balked, saying it would bog down the corporate network. Instead, the DAM system serves as more of a catalog. "We use the system to identify what we want and then use a third-party supplier to provide it on a Zip drive or CD," Mooney says. "Then we send it via a more traditional way to our offices around the world." That may sound a bit Sneakernet-ish, but Mooney says it's an improvement. Anyone who needed access to the archives used to have to fly to Atlanta every time they wanted to scope out some vintage calendar art for a new T-shirt—or rely on Mooney to pick something suitable for them.

During the coming years, the IT infrastructure needed to support access to these digital assets will improve, IDC's Duhl says. When that happens, look for DAM systems to deliver natural language and other nifty forms of searching, such as matching an image or a few bars of a song (most systems today rely on keyword searches, he says, which have their limits). Digital rights management will also be an increasingly important feature for DAM customers, as they look to share content across the firewall. "There really aren't any standards there yet," says Garth Landers, a research analyst at Gartner in Stamford, Conn.

Analysts see new markets for DAM in everything from corporate training to public safety (how else will law enforcement agencies manage and analyze the thousands of hours of surveillance videos collected as part of the post-9/11 homeland security drive? Landers asks). "Rich media is the last bastion of unmanaged information," Duhl says. It's also a fast-growing bastion of unmanaged information—all the more reason for CIOs to start paying attention to the DAM market. ■

Senior Editor Sari Kalin writes frequently on e-business technologies. If you have experiences with DAM, share them with Technology Editor Christopher Lindquist at *clindquist@cio.com*.

ILLUSTRATION BY HADLEY HOOPER

UNDER DEVELOPMENT

Portable power

Glass Battery: All Gain, No Pane

AS FAR AS INVENTIONS GO, a glass battery sounds about as promising as a concrete basketball or an oatmeal telephone. But Roy Baldwin claims that his unique power source could someday energize everything from mobile phones to automobiles.

Baldwin's battery is based on Dynaglass, an inorganic polymer that's allegedly stronger than steel, yet flexible enough to wrap food. Baldwin, a retired mechanical engineer, says Dynaglass was developed in the mid-1990s, but some of the technology is based on research by the Soviet military and space programs. He learned about the material while helping a friend ship medical supplies to Russia. "Later on, we discovered that the material could be used to store energy," says Baldwin, who then formed a company—Columbus, Ohio-based Dynelec—to explore the technology's potential.

Baldwin boasts that Dynaglass is a remarkable power source. A Dynaglass battery, he says, is infinitely rechargeable and might be able to generate up to 30 times more energy than a lead-acid battery of comparable size and weight. The device, which can be produced in a wide range of sizes, also contains no acids or other dangerous chemicals, making it pollution free. "It just reacts like glass," Baldwin says. But since Dynaglass isn't brittle like ordinary glass, it's durable and won't shatter when dropped.

While a working Dynaglass battery would be warmly received by mobile device manufacturers and users, Keith Keefer, a scientist based in Richland, Wash., is skeptical that Baldwin's technology is all that it's purported to be. He notes that several inventors have created similar devices, and that none of the devices has lived up to its promise. "No one has ever really made it work," he says.

Yet Baldwin is looking to interest manufacturers in his technology. "A glass producer could use this to enter the energy industry at practically no additional cost," he says.

–John Edwards

CIO

PERSPECTIVES

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COMPANIES TO WATCH
Spotfire

Creative Visualization

Spotfire analysis tools turn complex data into pretty—and powerful—pictures

BY CHRISTOPHER LINDQUIST

DOZENS OF information sources. Hundreds of thousands of data points. All of them critical to the future success of your company. But trying to analyze such massive amounts of information might even spin the number-happy head of *A Beautiful Mind*'s John Nash.

That's where Spotfire steps in. The Somerville, Mass.-based company builds analytical tools designed to let corporations create on-the-fly visual representations of complex data sets, helping mere mortals pluck drops of gold from oceans of lead.

Spotfire's DecisionSite combines a user interface called the Spotfire Experience with an analytic platform and data library. Customers attach back-end data sources and configure the analytics. Then simple controls cause multicolored data points to shift hue, fade out or blink into existence as analysts sift the numbers looking for subtle signs of the next big oil strike or cancer drug.

But beyond simply being able to provide researchers with a clearer picture of their data, DecisionSite has something else—a Web services focus, says Andrew Palmer, CIO at drug researcher Infinity Pharmaceuticals in Boston.

"The thing that was most compelling was when we started to combine distributed heterogenous data sources very easily," Palmer says. "It looked to the scientists like plug-and-play."

That flexibility allows Infinity to quickly integrate data sources—both internal and external—without long-term programming efforts. "We were looking for tremendous flexibility," Palmer recalls. "For us, Web services was a no-brainer."

At least one analyst notes that Spotfire has chosen a solid—and potentially very lucrative—niche for itself too.

"The life sciences industry is hurting in terms of appropriate tools to manage the data they've got," says Dan Vesset, a research manager at Framingham, Mass.-based IDC (a sister company to *CIO*'s publisher, CXO Media). "There's an issue that a product like Spotfire can expedite the process and make it more efficient."

Spotfire CEO Christopher Ahlberg admits that the low-hanging fruit for the company currently lies in the life sciences, natural resource exploration and chemical manufacturing. But he says he hopes that the company can expand into other areas, including business analytics. He points to current customers in the semiconductor field—including Advanced Micro Devices and Texas Instruments—as examples of Spotfire's value for manufacturing analysis. And he notes that other customers are already using Spotfire products for such things as portfolio and sales-office analysis. "You could do these things in reporting software," he says, "but the dynamics of being able to explore have never been there. That's what we're able to bring to the table."

Ahlberg also proposes that Spotfire tools can be used as a quick way to identify problems with data before it gets loaded into a data warehouse, as the visual tools would let analysts quickly identify anomalous data. He says that the National Transportation Safety Board discovered this use when it began analyzing huge volumes of flight-safety data using DecisionSite.

Even current—and happy—customers can find some room for improvement in Spotfire's products, however. "I think that the more they can deliver the same functionality that they do now in a very thin client, the better off they'll be," Palmer says. "It's so much easier when you can deliver everything over a browser."

Even with that quibble, however, Palmer is still a Spotfire convert. "It really is the best-of-breed visualization tool," he says.

watching...

Spotfire

Headquarters Somerville, Mass.

Founded 1996

Employees 180

Product Spotfire DecisionSite

Reason to Watch Innovative visualization tools and Web services focus

Hurdles May find some difficulty breaking out of science niche

Website www.spotfire.com

PHOTO BY PLASTOCK/PHOTONICA

THE FOURTH ANNUAL

CIO 100

CIO MAGAZINE'S ANNUAL SYMPOSIUM & AWARDS

Leadership and Innovation for the Future of the Integrated Enterprise

AUGUST 18–20, 2002 ■ THE BROADMOOR ■ COLORADO SPRINGS, COLORADO

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SUNDAY, AUGUST 18

8:00 AM – 1:30 PM
Golf Tournament
Tee up with *CIO* and our Corporate Partners on The Broadmoor's West Course, designed by Robert Trent Jones, and known for its challenging, steeply-angled greens.

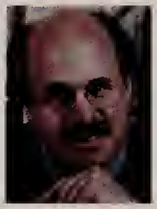
3:00 PM – 5:00 PM
Registration

6:30 PM – 8:00 PM
Café 100 Reception
Meet and network with other participants, Award honorees and Symposium Partners in our informal networking environment.

MONDAY, AUGUST 19: TODAY'S CHALLENGES

7:00 AM – 8:00 AM
Registration & Breakfast

8:00 AM – 8:15 AM
Conference Welcome
ABBIE LUNDBERG
Editor in Chief,
CIO Magazine



8:15 AM – 9:00 AM
Future Forewarned
PAUL SAFFO,
Conference Moderator
Director and Roy Amara Fellow,
Institute for the Future
What business and technology developments will have the most impact on CIOs in the year to come? Saffo shares his choices and why he thinks these are the key ones to look out for.

9:00 AM – 9:45 AM
Achieving Global Integration at GM
CHERRI MUSSER
CIO - Supply Chain,
eGM, Onstar Information Systems & Services

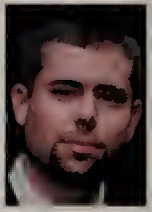
9:45 AM – 10:15 AM
Innovation, Leadership and Integration
CRAIG CONWAY
CEO, PeopleSoft, Inc.

10:15 AM – 10:45 AM
Mid-Morning Break

10:45 AM – 11:30 AM
Supply Chain Lessons Learned from the High-Tech Implosion
BUD MATHAISEL
Corporate Vice President & CIO,
Solectron
Inventory write-offs have been in the billions of dollars. This has been a financial problem for high-tech companies, and a particular embarrassment for those companies with vaunted Internet connections to their suppliers and customers. What went wrong? Was it the systems, processes, people or incentives that failed? Does a risk-based approach towards supply chain management have potential? Mathaisel presents his perspective and a framework for helping to prevent the reoccurrence of this expensive set of mistakes.

11:40 AM – 1:15 PM
Industry Briefings
Our corporate partners present case studies and sessions on deploying the latest technologies and services.

1:15 PM – 2:45 PM
Working Luncheon: Special Presentation on Security and Privacy
This session is produced in cooperation with the National Critical Infrastructure Assurance Office (CIAO) in the US Department of Commerce.



2:45 PM – 4:00 PM
Privacy, the Law and CIOs
CHRIS HOOFNAGLE
Legislative Counsel,
Electronic Privacy Information Center
Like it or not, as a CIO you will be highly involved in your organization's electronic privacy policies — and their legal ramifications. We look at current and proposed legislation that will have major impact on CIOs, their corporate officers, customers and employees.

4:00 PM – 5:30 PM
***CIO* Executive Mindshares**
Small working groups explore the leadership challenges and best practices of specific, critical IT/business topics. Members share experiences, lessons learned, mistakes and successes, and new ideas for tackling common problems. *Session participation is limited to CIOs and senior IT executives.*

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& AWARDS CEREMONY

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6:00 PM – 7:00 PM
Café 100 Reception
Catch up with our Symposium Partners and other participants in our informal networking lounge. Develop relationships with peers who will serve as sources of information and inspiration.

TUESDAY, AUGUST 20: TOMORROW'S OPPORTUNITIES

7:00 AM – 8:00 AM
Breakfast & Informal Roundtable Discussions
Gather with *CIO* magazine editors and fellow attendees to discuss common problems and possible solutions. Each table has a specific topic; choose one and join in.

8:00 AM – 8:15 AM
Welcome
PAUL SAFFO

8:15 AM – 9:15 AM
The Information Revolution: Why This is Just the End of the Beginning

W. BRIAN ARTHUR
Citibank Professor,
Santa Fe Institute
According to history, in the first stage of a technology revolution, a period of speculation is followed by a crash. But we can expect more real innovation to come in the great build-out that follows, this time driven by the interconnection of business and the appearance of Web-based services.

9:15 AM – 10:15 AM
The Future of Technology in Business, Part I
While the pace of innovation and change in the tech sector has slowed dramatically, the real build-out — and the real transformation of business — is yet to come. New developments like the semantic web, virtual reality modeling language (VRML), wireless everywhere, cutting-edge security tools and techniques, and the ability of organizations to store and manage over a petabyte of information will make things possible that only the futurists dreamed about before. This panel of leading technologists explores some of these critical areas.

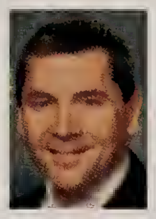
10:15 AM – 10:45 AM
The Future of Techonology in Business, Part II
The morning's speakers gather for an interactive discussion about where these developments will lead today's organizations.

10:45 AM – 11:15 AM
Mid-Morning Break

11:15 AM – 12:55 PM
Industry Briefings

1:00 PM – 2:15 PM
Networking Luncheon
Savor lunch and the beautiful view from the Lakeside Terrace while you extend your peer network.

2:30 PM – 3:30 PM
Leading in the Next Business/IT Epoch
Moderator:
ABBIE LUNDBERG
Editor in Chief,
CIO Magazine
Panelists:



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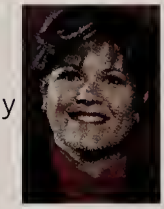

REBECCA RHOADS
CIO, Raytheon Company
IT is more exposed to, and embedded in, the business than ever before. As we emerge from the recession, what will be the next IT epoch, and how will CIOs best lead their organizations into it? This roundtable of CIO 100 Honorees discusses our current state of evolution, where we're heading and the requirements of the IT leadership role, including shifting accountability, governance and organization models, the challenge of ROI, and transformation vs. enablement.

3:30 PM – 4:15 PM
Closing Keynote
MICHAEL SCHRAGE
Inventor, Columnist and Author of "Serious Play: How the World's Best Companies Simulate to Innovate"

4:15 PM – 4:30 PM
Closing Comments
PAUL SAFFO & ABBIE LUNDBERG

4:30 PM – 6:30 PM
Free Time/Informal Networking

6:30 PM – 7:00 PM
CIO 100 Awards Reception
Put on the evening wear for our special black tie reception, followed by dinner and the awards ceremony to recognize this year's CIO 100 Award Honorees.

7:00 PM – 9:30 PM
CIO 100 Awards Dinner and Ceremony

9:30 PM – 11:00 PM
Dessert Reception Hosted by CIO 100 Awards Ceremony Underwriter, PeopleSoft, Inc.
Cap off the evening with a special post-awards reception.

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EXECUTIVE Summaries

July 15, 2002

COVER STORY | Reining in Big Consulting

By Christopher Koch | **46**

Though there are many reasons for the high rate of enterprise-level IT project failures, CIOs have concluded that the current pricing and delivery models of the big consulting firms are a key culprit. These CIOs decry consultancies for sending in underqualified people at high billing rates and turning those people over constantly, causing major disruptions. They condemn consulting's antiquated time-and-materials pricing model: Consultants get paid for every hour they put in on the project, regardless of performance. They criticize vendors for lowballing their estimates to get in the door. CIOs are not blameless, as many refuse to invest the time and money to reengineer processes to effectively use new enterprise systems. But CIOs seem to be voting against big consulting practices with their feet, as revenue growth for these firms has slowed. Eastman Chemical, John Deere and Owens Corning are some of the companies pursuing alternatives, which include replacing consultant project managers with internal leadership, hiring smaller consultancies to work on bite-size projects, or demanding that their big consultants cap or fix costs, and tie pricing to performance.

> **"I was taken in, and they did their best to take me in."**
>
> –WAYNE HALL, CIO, THE NAUTILUS GROUP

Lessons from Chapter 11

By Ben Worthen | **54**

IN THE PAST, when a company entered bankruptcy protection, the IT department went into maintenance mode, ceasing all project development. That's all changed. Chapter 11 gives companies a chance to regroup, and IT plays a vital role. CIOs in this situation follow a three-step strategy for emerging stronger: Figure out where every dollar goes, plan IT's strategic role in fixing the business, and subject that strategic plan to regular scrutiny. Lessons learned during the experience would benefit CIOs in any business. For example, CIOs who have had to assess spending in order to renegotiate contracts say that compiling a database to track all IT spending is the first thing they would do if they started a new job tomorrow—regardless of bankruptcy status. Those efforts have helped CIOs discover such oversights as multiple vendors for the same products and redundant software licenses.

Value Methodology Guide

By Tracy Mayor | **60**

A VALUATION METHODOLOGY is a logical, repeatable framework for making IT investment decisions and monitoring technology projects to ensure that they ultimately contribute to the financial health and growth of the organization. In this methodology guide, we divide the major methodologies into three categories: traditional financial metrics; "heuristic" methods that attempt to round out quantitative measures with subjective and qualitative inputs; and probabilistic approaches that use statistical and mathematical models to measure risk with a range of probabilities. Some tools, like Real Options Valuation, are building blocks rather than methodologies in themselves. Others, like the Balanced Scorecard, try to be full-blown performance-management systems covering everything from goal setting to incentive compensation. To be effective, any methodology must align IT activities with business strategy, link IT to shareholder value, help CIOs talk to finance, help prioritize projects and mitigate—or at least anticipate—risk.

KM Done Right

By Simone Kaplan | **74**

KNOWLEDGE MANAGEMENT is how organizations extract value from their intellectual assets. Because it's such a broad objective, there's no cookie-cutter approach to adopting knowledge management. Many vendors push turnkey systems, contributing to a one-size-fits-all mentality and a misplaced focus on technology rather than people and process—all detrimental to KM's payoff. But there are a few steps organizations can follow to prepare for a more successful KM implementation. First, executives must evaluate what their strategic need for KM is. Then they should examine the effectiveness of current knowledge processes and whether the culture is ready for procedural changes. Once they have resolved those issues, the CIO can evaluate the existing IT infrastructure to determine whether it's adequate for KM or whether new systems are needed.

Digital Asset Management Systems

By Sari Kalin | **82**

DIGITAL ASSET MANAGEMENT (DAM) software stores and organizes images, audio, video and other digital objects, making them easier to find, transform and reuse. DAM was once a niche application for media, entertainment and advertising companies. Now companies such as DaimlerChrysler and Coca-Cola, which are awash in content, are using DAM to provide a centralized, speedy way for employees and partners to locate and manipulate content. DAM efforts often begin with analog assets being converted into digital form. The conversion task can be time consuming and expensive, forcing most companies to be selective about what they digitize. Once a company picks what to put online, it must decide how to describe its assets, who will access the digital assets and how.

I hear we've got wireless access to the company network.
I hear we've got real-time financial data, from anywhere.
Barbara Chandler
Charles Alexander
I hear they've got a machine that makes coffee.
Venti International Corp.

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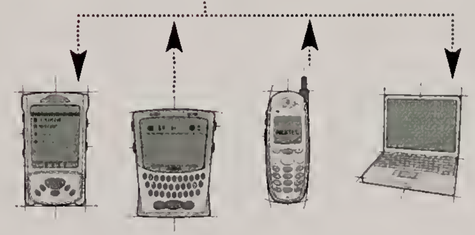

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"There is no reason for any individual to have a computer in their home."

1977

"Portal, schmortal."

2002

(Pooh-pooh it now, while you still can.)

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